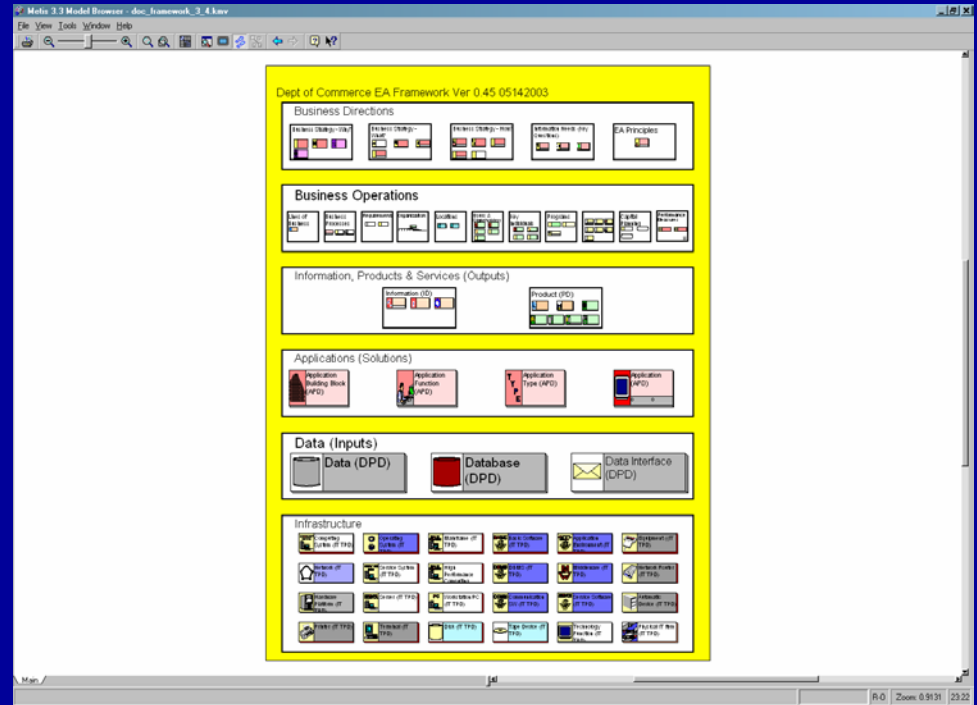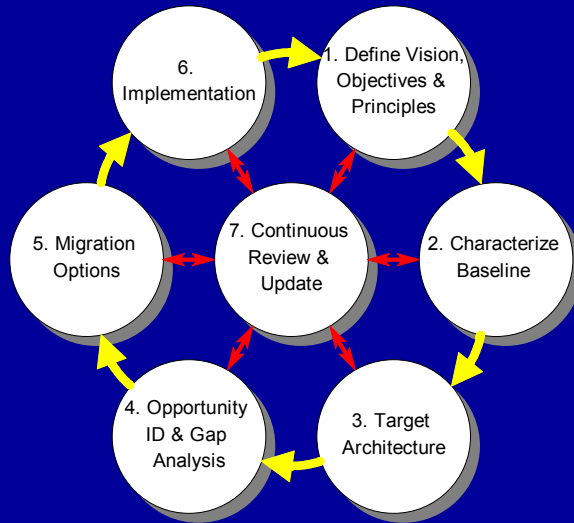**Enterprise Architecture**

Case Study:
Department of Commerce: Implementing the Federated IT Enterprise Architecture Process

Government Enterprise Architecture Conference

Ira Grossman

NOAA IT Architect

June 6, 2003

Department of Commerce IT Architecture

Enterprise Architecture

1. Define Vision, Objectives & Principles
2. Characterize Baseline
3. Target Architecture
4. Opportunity ID & Gap Analysis
5. Migration Options
6. Implementation
7. Continuous Review & Update

https://secure.cio.noaa.gov/hpcc/docita/

Disclaimer: The opinions expressed in this presentation are solely those of the speaker and are not those of the Department of Commerce or the National Oceanic and Atmospheric Administration.

Outline

Enterprise Architecture

- **What is an Enterprise Architecture (EA)?**
- Department of Commerce IT Architecture
- DoC Technical Reference Model and Standards Profile
- DoC IT Architecture Capability Maturity Model
- Commerce EA Model Toolset
- Lessons Learned

What is an Enterprise Architecture?

- **A blueprint that explains how all the IT Management and Infrastructure elements work together as a whole**
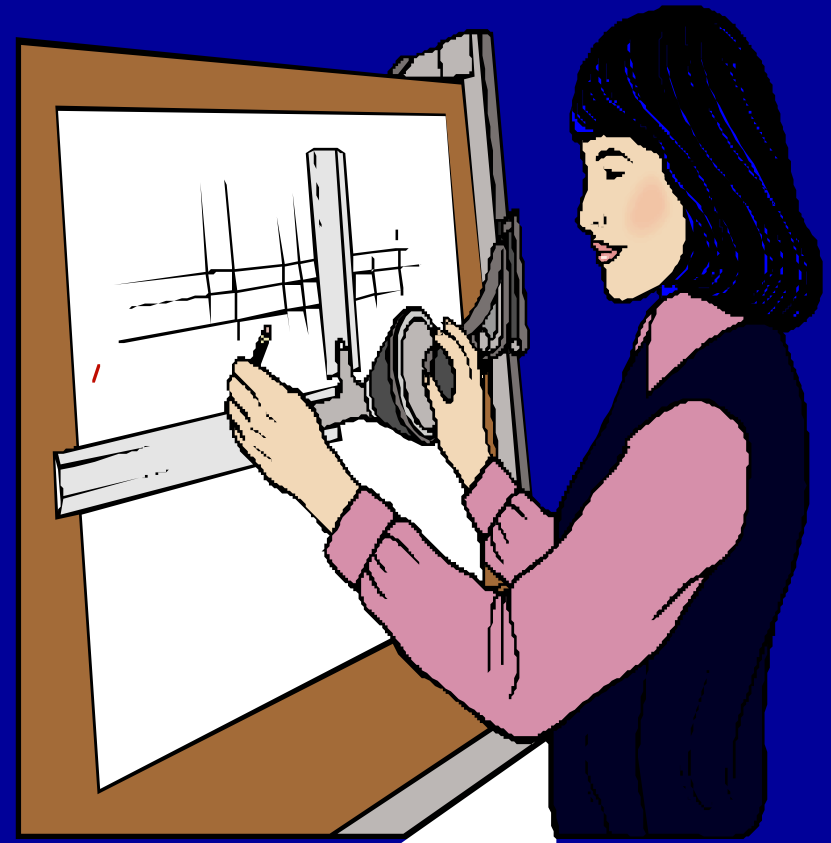
Vision

To Clearly Link Strategic Plan, Mission, and Business Processes to Enterprise Architecture to Capital IT Investment Planning and Decision Making

Enterprise Architecture (vertical sidebar text)

- Strategic Plan
- Mission
- Business Processes
- Enterprise Architecture
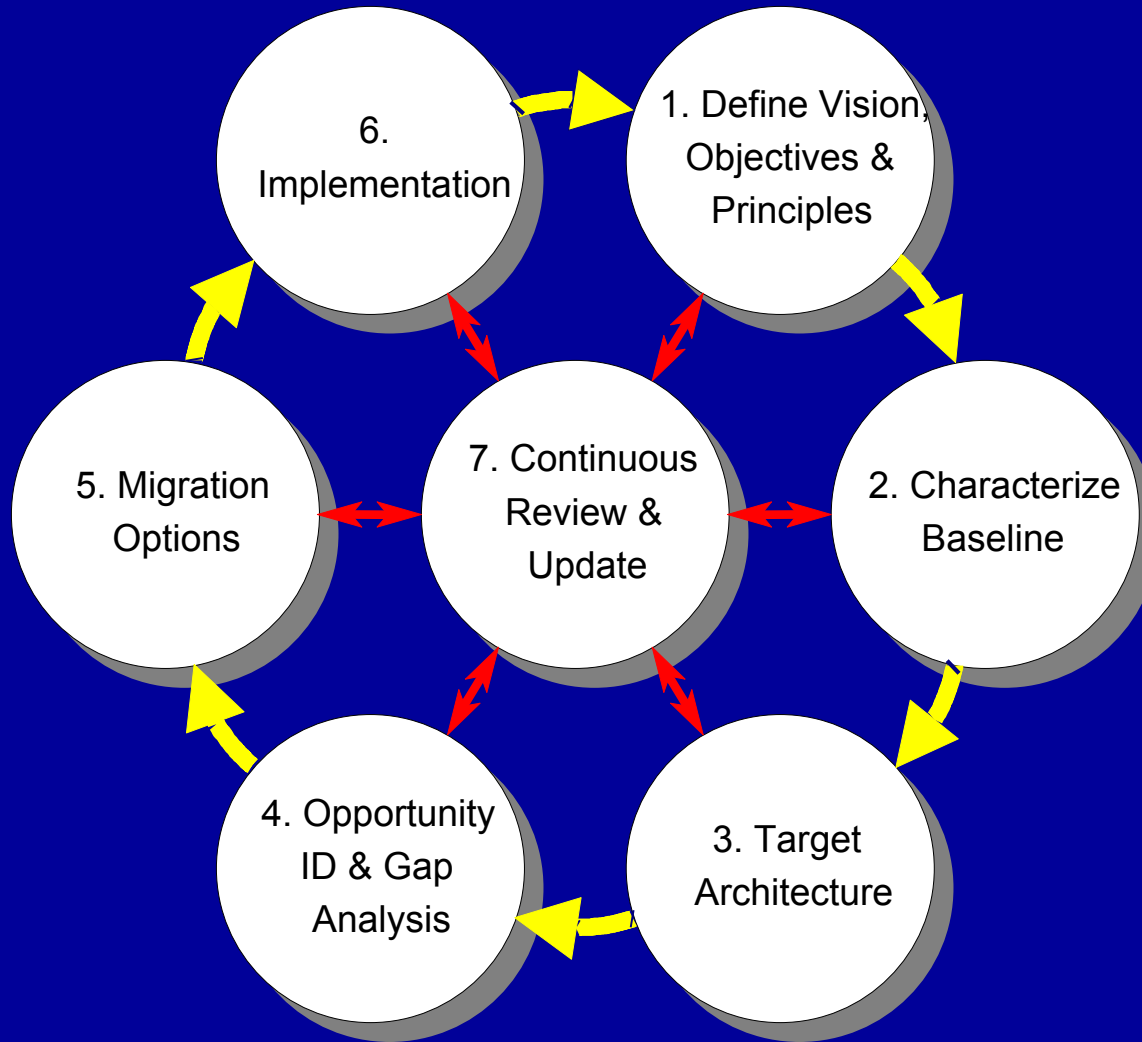- IT Capital Investment Planning And Decision Making
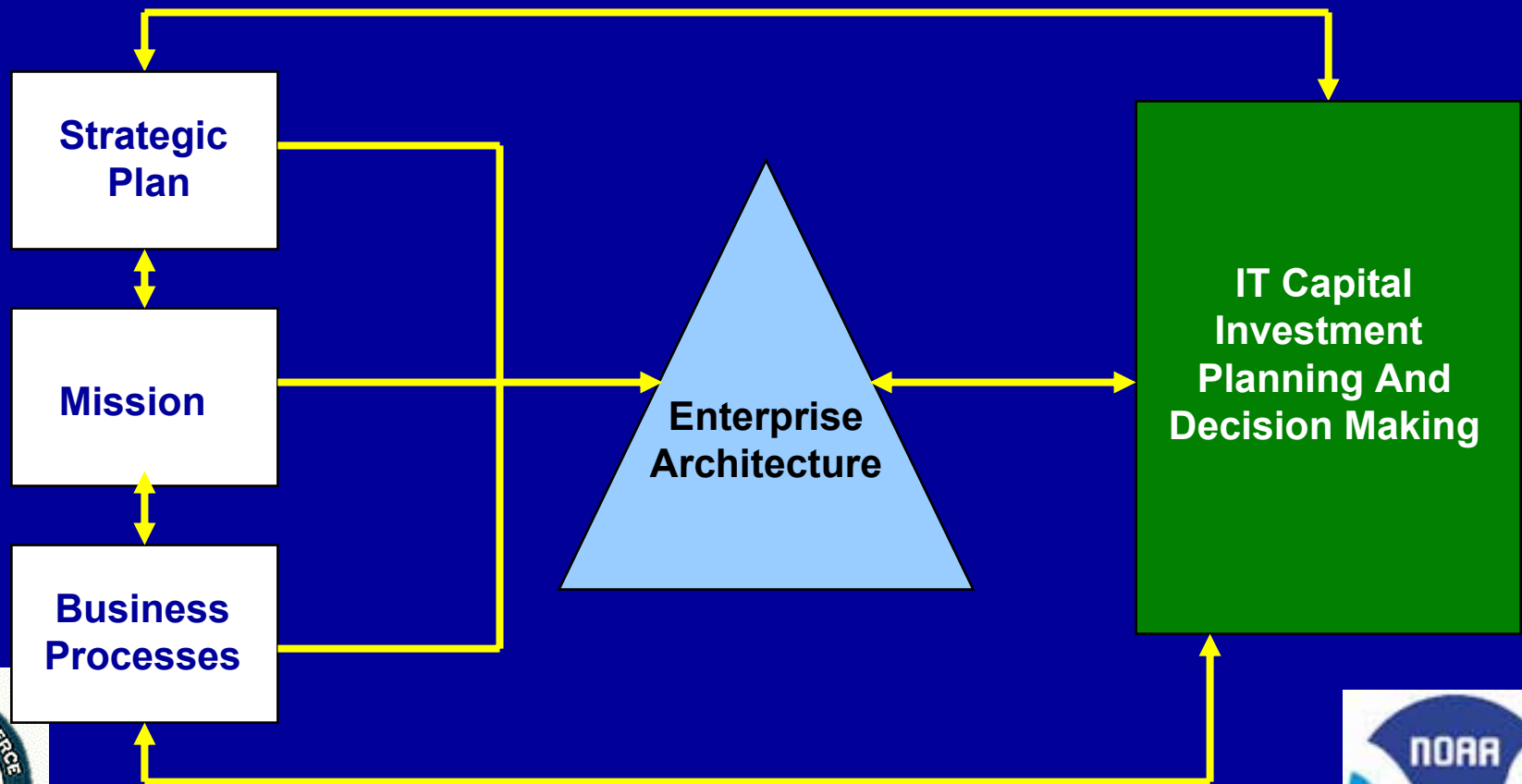
In the Beginning:
DoC IT Architecture Efforts

- **Ad-hoc pockets of excellence existed throughout the Department**

- **Some organizations had done extensive IT Architecture work**

- **Some organizations had done none**

- **Mix between in-house development and working with outside contractors**

- **For those EAs developed or underway, scope and effort matched the guidance from the Federal Enterprise Architecture Conceptual Framework**
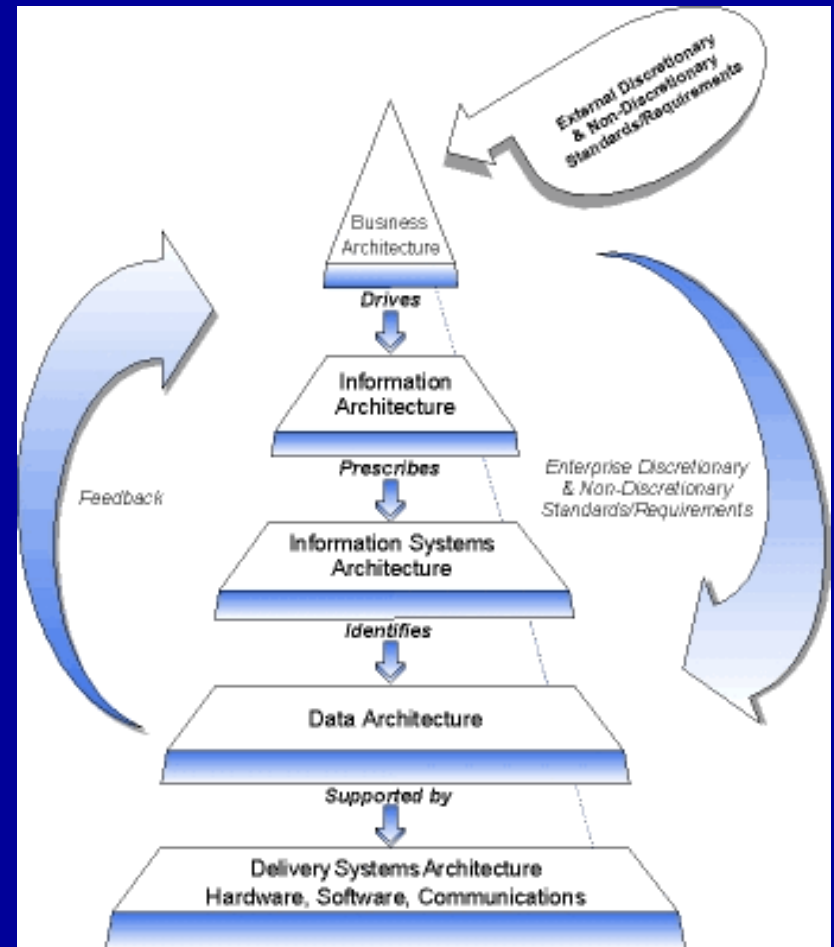
DoC IT Architecture Process Model

Enterprise Architecture

- 6. Implementation
- 1. Define Vision, Objectives & Principles
- 7. Continuous Review & Update
- 5. Migration Options
- 2. Characterize Baseline
- 4. Opportunity ID & Gap Analysis
- 3. Target Architecture

NIST Enterprise Architecture Framework

Enterprise Architecture

- **IT Architecture Components**
    - **Business Process**
    - **Information Flows and Relationships**
    - **Applications**
    - **Data Descriptions**
    - **Technology Infrastructure**

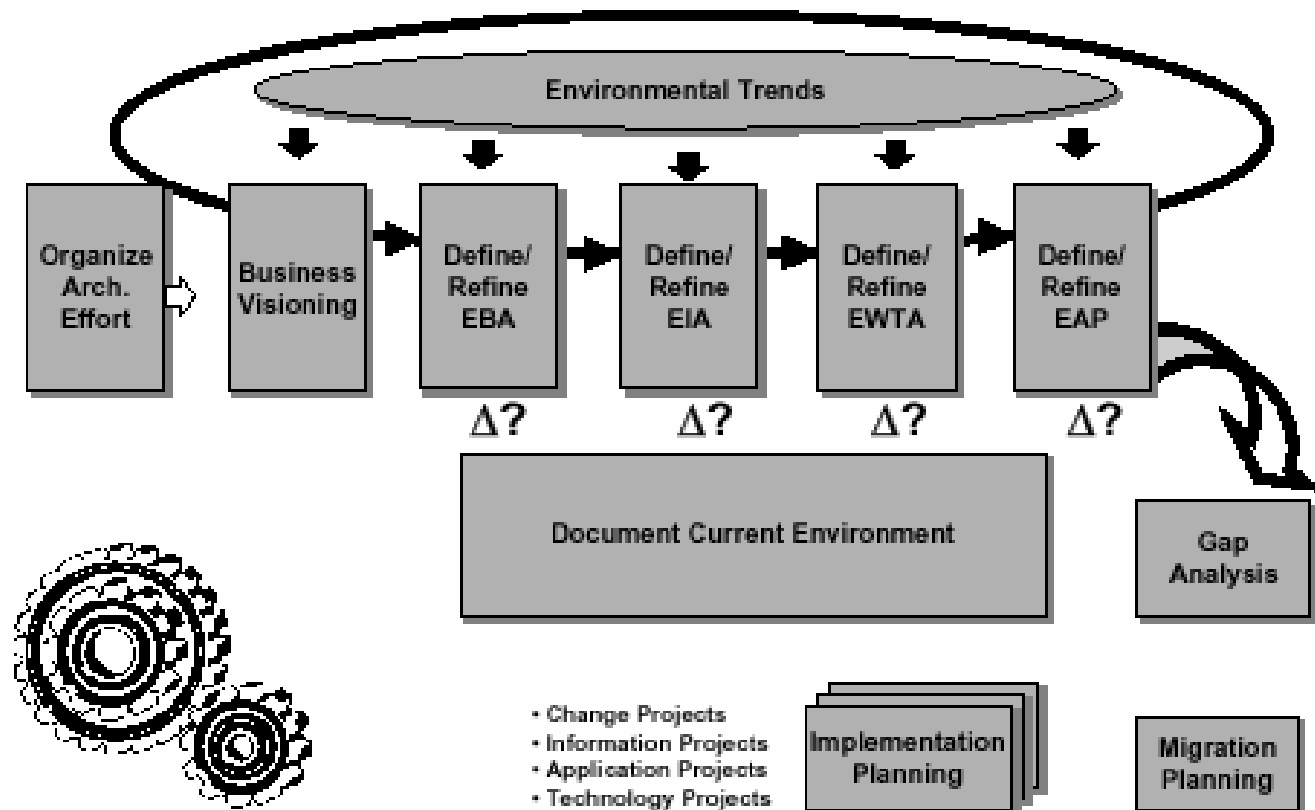*OMB Circular A-130, Management of Federal Information Resources, November 28, 2000*

NIST Special Publication 500-167, Information Management Directions: The Integration Challenge" September, 1989

META EAS Process Model

Figure 2 — New EAS Process Model

META Practice, "EAS Process Model: Evolution 2000" Volume 4, Number 3 April 2000

Outline

- **What is an Enterprise Architecture?**

- **Department of Commerce IT Architecture**

- **DoC Technical Reference Model and Standards Profile**

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- **Commerce EA Model Toolset**

- **Lessons Learned**

What Is a Federated IT Architecture?

- **Federated Architecture[1] – Defines common or shared architecture standards (and IT Principles) across lines of business (LOBs)**

- **Enables LOBs to maintain diversity and uniqueness, while providing interoperability**
  - LOBs have full autonomy to develop standards for applications and infrastructure and to define architectures
  - LOB goal is to optimize performance at LOB level

[1] **META Delta 46, "Federated Architectures: Integrating Autonomous LOBs", March 1, 1999**

What Is a Federated IT Architecture?

- **Defines the common or shared enterprise architecture principles and standards across each agency listed in the Clinger-Cohen Act.**

- **Allows each agency to maintain enough diversity and uniqueness necessary to accomplish its mission, while providing for government-wide interoperability and commonality.**
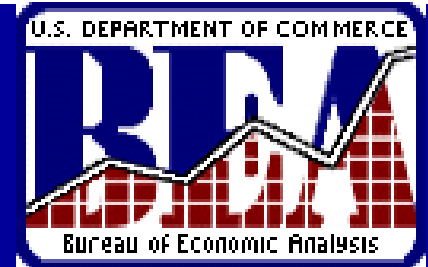
What Is a Federated IT Architecture?

The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.

Tenth Amendment (Reserved Powers Clause) to the U. S. Constitution

Enterprise Architecture

The Bureau of Export Administration
U.S. Department of Commerce

National Technical Information Service
The Central Source For Government Information
Customer Support | Site Index | Review Your Order

NTIS

NIST CENTENNIAL 1901-2001

U.S. DEPARTMENT OF COMMERCE
BEA
Bureau of Economic Analysis

NOAA

USPTO

STAT-USA

U.S. DEPARTMENT OF COMMERCE
MBDA
MINORITY BUSINESS DEVELOPMENT AGENCY

U.S. DEPARTMENT OF COMMERCE
NTIA
NATIONAL TELECOMMUNICATIONS & INFORMATION ADMINISTRATION

International Trade Administration
United States Department of Commerce 1-800-USA-TRADE
Hot News   DOC   Site Map   Press Room   Contact Us
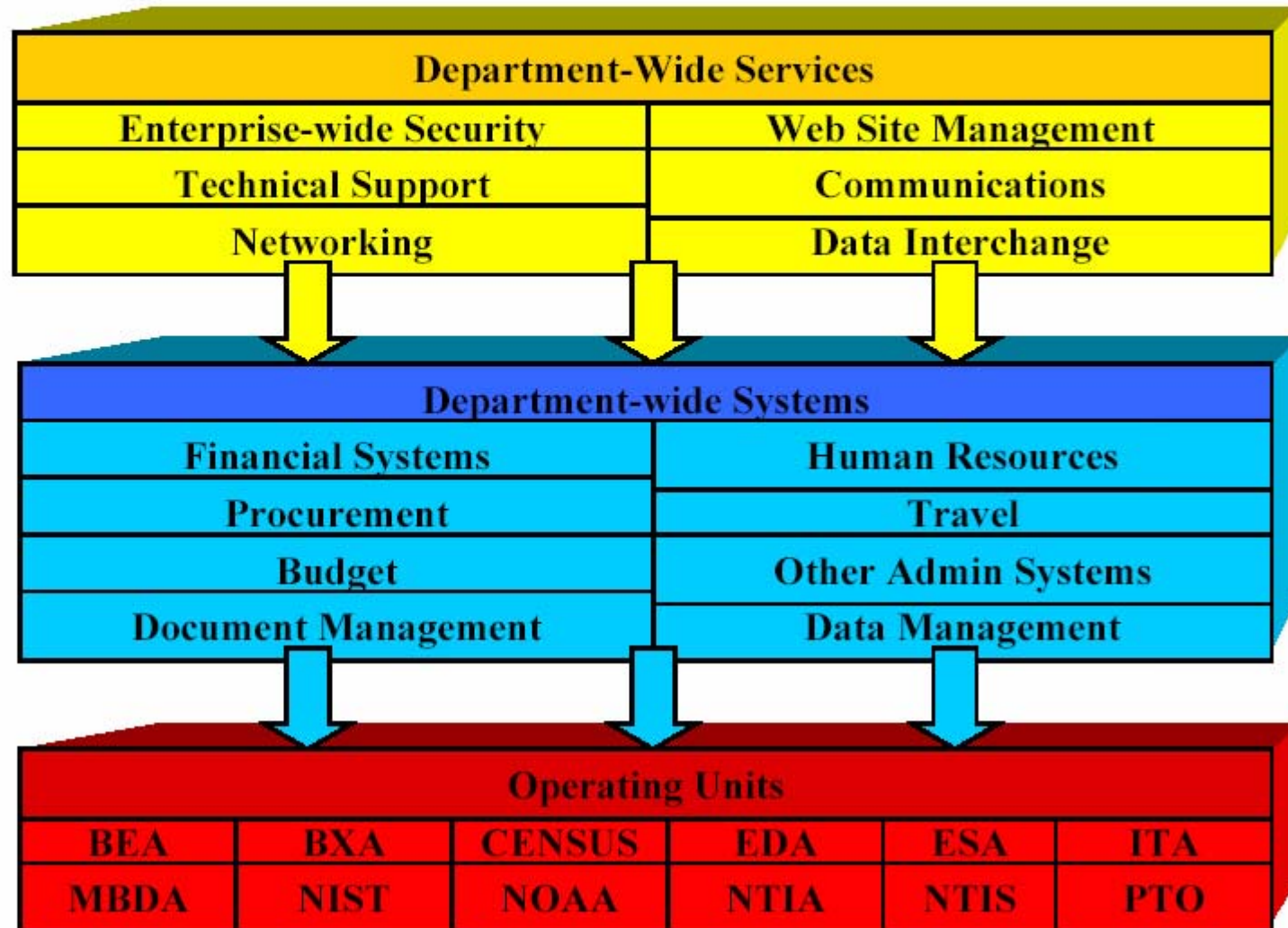Get New Customized State Export Data

06062003 - 14

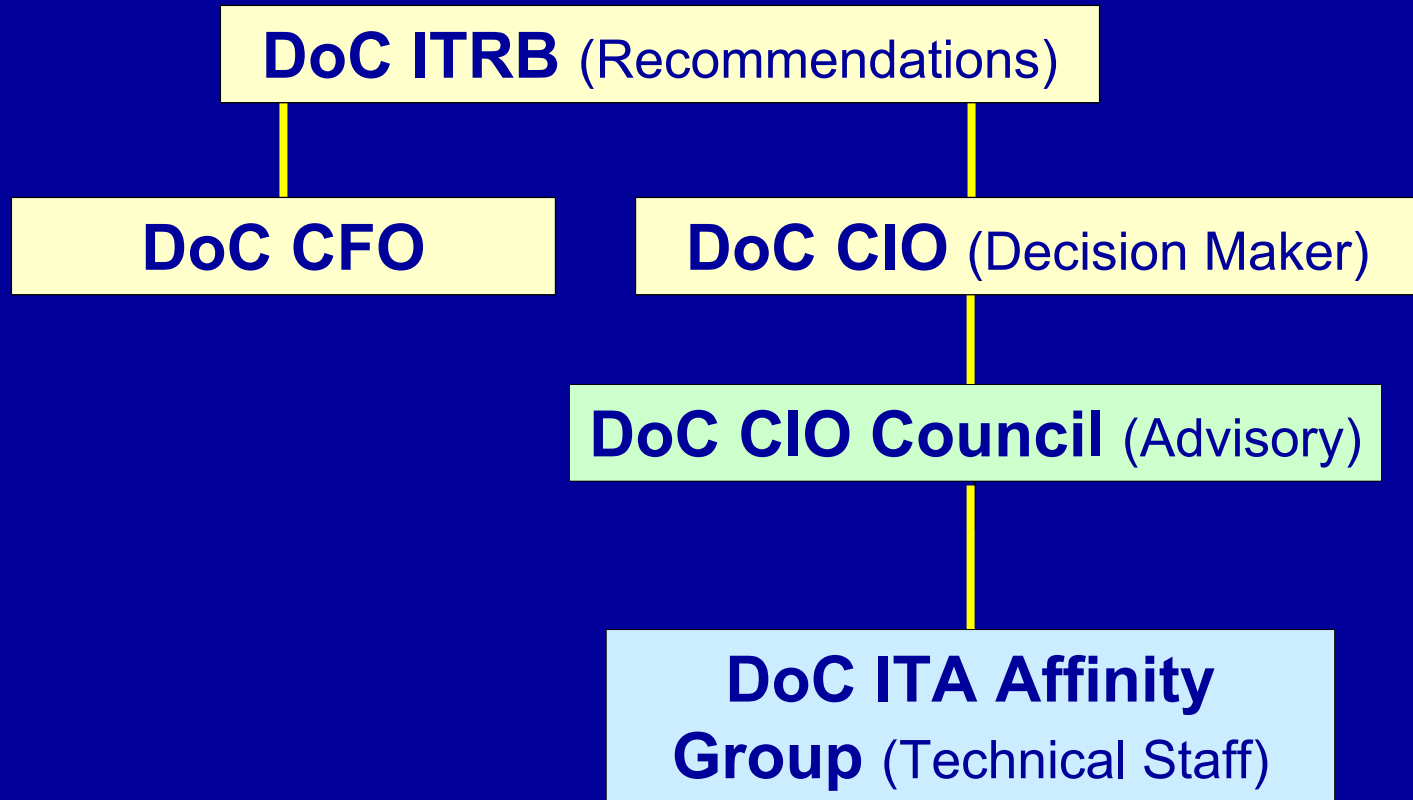# Department of Commerce Organizations

- **Office of the Secretary**
- **Bureau of Industry and Security**
- **Economics and Statistics Administration**
  - Bureau of Economic Analysis
  - Bureau of the Census
- **Economic Development Administration**
- **International Trade Administration**
- **Minority Business Development Agency**

- **National Oceanic & Atmospheric Administration**
- **National Telecommunications & Information Administration**
- **Office of Inspector General**
- **Patent and Trademark Office**
- **Technology Administration**
  - National Institute of Standards & Technology
  - National Technical Information Service
  - Office of Technology Policy

DoC Federated Information Technology Architecture Structure

Department-Wide Services

Enterprise-wide Security	Web Site Management
Technical Support	Communications
Networking	Data Interchange

Department-wide Systems

Financial Systems	Human Resources
Procurement	Travel
Budget	Other Admin Systems
Document Management	Data Management

Operating Units

BEA	BXA	CENSUS	EDA	ESA	ITA
MBDA	NIST	NOAA	NTIA	NTIS	PTO

DoC IT Governance Structure

Enterprise Architecture

DoC ITRB (Recommendations)

DoC CFO

DoC CIO (Decision Maker)

DoC CIO Council (Advisory)

DoC ITA Affinity Group (Technical Staff)

DoC IT Architecture Affinity Group

- **Chartered by CIO Council as a resource to help develop IT Architecture throughout the Department by providing guidance and making recommendations on Operating Unit efforts**

- **Meet every other Tuesday morning for 90 minutes**

- **Held first meeting on January 11, 1999**

- **Created DoC IT Enterprise Architecture Home Page:**
  https://secure.cio.noaa.gov/hpcc/docita/

https://secure.cio.noaa.gov/hpcc/docita/

DoC IT Architecture Affinity Group

Enterprise Architecture

- **Developed DoC IT Architecture Guidance Documents and Evaluation Checklist**

- **Developed DoC Technical Reference Model and Standards Profile**

- **Created DoC IT Architecture Capability Model**

- **Provide guidance on and review all Operating Unit Enterprise Architectures**

- **Received Department of Commerce Bronze Medal Award – December 2000**

- **Peer review of annual Enterprise Architecture updates**

- **Integrating Department-wide implementation of Commerce EA modeling toolset application**

DoC Enterprise Architecture Timeline

- **November 1998 – CIO authorized creation of IT Architecture Affinity Group**

- **January 1999 – IT Architecture Affinity Group held its first meeting**

- **March 1999 - Presented recommendations to CIO Council**

- **August 1999 – IT Architecture Guidance issued**

- **October 1999 – First IT Architecture documents were due to IT Architecture Affinity Group**

Enterprise Architecture

- **June 2000 – Updated IT Architecture Documents sent to IT Architecture Affinity Group**

- **December 2000 – Released Version 1.0 of Dept. of Commerce Architecture Capability Maturity Model**

- **April 2002 – Released Version 2.0 of Dept. of Commerce Architecture Capability Maturity Model**

- **August 2002 – Operating Unit EA CMM scorecard results sent to Dept. OCIO**

- **July 2003 – Began market research for Enterprise Architecture modeling software that could be used Department-wide**

Evaluation Criteria - Architecture Development Checklist

1. **Identify** Business Processes **that will be the bases for Architectures**

2. **Develop and document** IT Architectural Principles **for each of the** four IT Architecture views

3. **Ensure that the** IT Architecture Principles **and other Architecture efforts are** integrated with strategic planning and budgeting processes

4. **Characterize and document the** Baseline Architecture **based on the four IT Architecture views**

5. **Develop and document a** Target Architecture **based on the four IT Architecture views**

Enterprise Architecture

6. **Create a Technical Reference Model and Requirements Profile.**

   Include an IT Security Requirements Profile in accordance with OMB Circular A-130 Paragraph 8.b.(2)(c)(iii).

7. **Conduct a Gap Analysis showing where the Baseline Architecture and the Target Architecture differ**

8. **Develop and document a Migration Plan to accommodate the organization's capacity to handle change**

9. **Implement Migration Plan**

   Contingent upon the budget process and upon obtaining the necessary funds to proceed

Enterprise Architecture

10.Establish a Governance Structure to ensure enterprise-wide compliance with IT Architecture.

11.Conduct an IT Architecture Capability Maturity self assessment

NOAA IT Principles

- **Meta Principles**
- **Business Process Principles (NOAA's Mission)**
- **Data Principles**
- **Application Principles**
- **Technology Infrastructure Principles**

NOAA IT Principles - Meta

- M.1. IT Decisions Will Be Driven by Total Business Worth to NOAA

- M.2. NOAA will make use of vendor-neutral (e.g., TCP/IP or Bluetooth) and vendor-specific (e.g., Microsoft Windows) standards, **where practical, to develop interoperable and open systems.**

- M.3. Security **is essential and appropriate security will be provided for NOAA networks, servers, computers, and data/information.**

- M.4. Electronic Accessibility of Services and Products **will be provided in accordance with Federal law for persons with disabilities.**

- M.5. Training **is essential to retain personnel, and to make effective use of IT systems and resources NOAA will attempt to coordinate the provision of state-of-the-art training anytime and anywhere through the use of Internet and other electronic means.**

- M.6. The IT Architecture will be regularly updated **to reflect changes in strategic goals, business needs, and technology.**

NOAA IT Principles -Business Process

- B.1. Accomplishment of NOAA's mission is critically dependent on a sound IT infrastructure.

- B.2. Business Processes will be optimized **through appropriate use of digital workflow technologies.**

- B.3. Appropriate Access to resources **will be provided independently of location or organization.**

- B.4. Partnerships **with constituents and collaborators in academia, industry and other agencies will be fostered and encouraged.**

NOAA IT Principles - Data

- D.1. Data Is a Corporate Resource **and will be managed effectively and efficiently, made available, and archived in accordance with Federal Regulations.**

- D.2. Metadata **will be developed and maintained.**

- D.3. Data will be entered and captured only once.

- D.4. Data will be kept Separate from Applications.

- D.5. Data will be Online **to the extent feasible and appropriate.**

NOAA IT Principles - Applications

- A.1. User requirements **will drive application development.**

- A.2. Process Re-engineering or Simplification **will be evaluated before buying or developing applications for a process.**

- A.3. Off-the-Shelf Software **will be used in preference to home-grown solutions when it can meet requirements.**

- A.4. Application development **will use proven software engineering methodologies to develop, re-engineer, maintain and implement applications.**

- A.5. Security, networking, scalability, modularity and platform independence **will be critical design elements.**

- A.6. Documentation **of all applications will be provided and maintained.**

NOAA IT Principles - Technology Infrastructure

- T.1. NOAA will provide a common network environment **with adequate bandwidth, using a standard set of protocols, to support NOAA's network services.**

- T.2. The Internet/Web **will be a key element in acquiring, transmitting, and sharing NOAA data and information. NOAA seeks standard and easier ways to access increasingly complex technologies and information.**

- T.3. Messaging **is critical to NOAA's day-to-day business operations and must be reliable, accessible, secure, must provide electronic forms for collaboration, and must provide a robust corporate directory.**

- T.4. Technologies **will be chosen to enhance mission capabilities, to improve customer service, and to support scalability, portability, operability, compatibility and evolutionary changes.**

Enterprise Architecture

- T.5. Emerging technologies will be evaluated in pilot projects **before using them in critical and/or operational systems. Technologies may be adopted if proven effective and efficient in pilot demonstrations.**

- T.6. High Performance Computing **will be used to meet NOAA's requirements for increased high-end computing resources for higher resolution models and for improved representation of the physics, chemistry, and biology of environmental systems, and to help manage and process the rapidly increasing amounts of data available and necessary to run the models.**

Outline

- **What is an Enterprise Architecture?**
- **Department of Commerce IT Architecture**
- **DoC Technical Reference Model and Standards Profile**
- **DoC IT Architecture Capability Maturity Model**
- **Commerce EA Modeling Toolset**
- **Lessons Learned**

Technical Reference Model and Standards Profile

Technical Reference Model (TRM)

- **Defines the building blocks** for developing an Information Technology (IT) Architecture

- **Provides a** common conceptual framework

- **Defines a** common vocabulary

- **Provides a** set of service definitions and relationships

- **Based on "NIST Special Publication 500 – 230, Application Portability Profile, Version 3.0"**

- **Describes the** main elements of a complete IT system as a set of IT Services

Standards Profile

- **Provides a framework for** specifying standards, interfaces and protocols **for service components**
- **Services column** identifies the **Service and the Service Components**
- **Standards/Protocols column**
  - **Vendor-neutral standards**
  - **Vendor-specific standards**
  - **Interfaces**
  - **Protocols**
  - **Product specifications**

Outline

Enterprise Architecture

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IT Architecture Capability Maturity Model

Enterprise Architecture

- **Ensure that the Department continues to build on IT Architecture efforts and fully realizes the benefits**

- **Assess IT processes**

- **Ascertain where we are and where we should be headed within the organization**

- **Enhance the overall odds for success**

- **CIOs use as a self-assessment tool**

- **Identify weak areas and provide a defined path towards improvement.**

- **As the Architecture matures it should increase the benefits it offers the organization**

IT Architecture Capability Maturity Model

Enterprise Architecture

- **Tools**
  - Department of Commerce (DoC) IT Architecture Maturity Model
  - Characteristics of DoC Operating Units' IT Architecture Processes at Different Maturity Levels
  - DoC IT Architecture Capability Scorecard

- **Maturity Level**
  - **0** No IT Architecture Program
  - **1** Initial - Informal IT Architecture Process Underway
  - **2** IT Architecture Process Is Under Development
  - **3** Defined IT Architecture Including Detailed Written Procedures and TRM
  - **4** Managed and Measured IT Architecture Process
  - **5** Optimizing - Continuous Improvement of IT Architecture Process

Table - DoC IT Architecture Capability Maturity Model

Level	Focus	Architecture Characteristics[2]
0	No IT Architecture Program	No IT Architecture to speak of.
1	**Initial** - Informal IT Architecture Process Underway	(1) **Processes are ad hoc and localized.** Some IT Architecture processes are defined. There is **no unified architecture process** across technologies or business processes. Success depends on individual efforts. (2) IT Architecture processes, documentation and standards are established by a variety of ad hoc means and are localized or informal. (3) Minimal, or implicit linkage to business strategies or business drivers. (4) Limited management team awareness or involvement in the architecture process. (5) Limited Operating Unit acceptance of the IT Architecture process. (6) The latest version of the Operating Unit s IT Architecture documentation is on the Web. Little communication exists about the IT Architecture process and possible process improvements. (7) IT Security considerations are ad hoc and localized. (8) No explicit governance of architectural standards. (9) Little or no involvement of strategic planning and acquisition personnel in enterprise architecture process. Little or no adherence to existing Standards Profile.
2	IT Architecture Process Is **Under Development**	(1) Basic IT Architecture Process program is documented based on OMB Circular A - 130 and Department of Commerce IT Architecture Guidance. The architecture process has developed clear roles and responsibilities. (2) **IT Vision, Principles, Business Linkages, Baseline, and Target Architecture are identified.** Architecture standards exist, but not necessarily linked to Target Architecture. **Technical Reference Model and Standards Profile framework established.** (3) Explicit linkage to business strategies. (4) Management awareness of Architecture effort. (5) Responsibilities are assigned and work is underway. (6) The DoC and Operating Unit IT Architecture Web Pages are updated periodically and is used to document architecture deliverables. (7) IT Security Architecture has defined clear roles and responsibilities. (8) Governance of a few architectural standards and some adherence to existing Standards Profile. (9) Little or no formal governance of IT Investment and Acquisition Strategy. Operating Unit demonstrates some adherence to existing Standards Profile.
3	**Defined** IT Architecture Including Detailed Written Procedures and Technical Reference Model	(1) The architecture is well defined and communicated to IT staff and business management with Operating Unit IT responsibilities. The process is largely followed. **(2) Gap Analysis and Migration Plan are completed**. **Fully developed Technical Reference Model and Standards Profile.** IT goals and methods are identified. (3) **IT Architecture is integrated with capital planning & investment control.** (4) Senior-management team aware of and supportive of the enterprise-wide architecture process. Management actively supports architectural standards. (5) Most elements of Operating Unit show acceptance of or are actively participating in the IT Architecture process. (6) Architecture documents updated regularly on DoC IT Architecture Web Page. (7) IT Security Architecture Standards Profile is fully developed and is integrated with IT Architecture. (8) Explicit documented governance of majority IT investments. (9) IT acquisition strategy exists and includes compliance measures to IT Enterprise Architecture. Cost-benefits are considered in identifying projects.

Level	Focus	Architecture Characteristics[2]
4	**Managed** and Measured IT Architecture Process	(1) IT Architecture process is part of the culture. **Quality metrics associated with the architecture process are captured.** (2) IT Architecture documentation is **updated on a regular cycle** to reflect the updated IT Architecture. Business, Information, Application and Technical Architectures **defined by appropriate de-jure and de-facto standards.** (3) Capital planning and investment control are adjusted based on the feedback received and lessons learned from updated IT Architecture. Periodic re-examination of business drivers. (4) Senior-management team directly involved in the architecture review process. (5) The entire Operating Unit accepts and actively participates in the IT Architecture process. (6) Architecture documents are updated regularly, and frequently reviewed for latest architecture developments/standards. (7) Performance metrics associated with IT Security Architecture are captured. (8) Explicit governance of all IT investments. Formal processes for managing variances feed back into IT Architecture. (9) All planned IT acquisitions and purchases are guided and governed by the IT Architecture.
5	**Optimizing** - Continuous Improvement of IT Architecture Process	(1) Concerted efforts to optimize and continuously improve architecture process. (2) A standards and waivers process are used to improve architecture development process improvements. (3) **Architecture process metrics are used to optimize and drive business linkages.** Business involved in the continuous process improvements of IT Architecture. (4) Senior management involvement in optimizing process improvements in Architecture development and governance. (5) Feedback on architecture process from all Operating Unit elements is **used to drive architecture process improvements**. (6) **Architecture documents are used by every decision maker in the organization for every IT-related business decision.** (7) Feedback from IT Security Architecture metrics are used to drive architecture process improvements. (8) Explicit governance of all IT investments. A standards and waivers process is used to improve governance-process improvements. (9) No unplanned IT investment or acquisition activity.

Characteristics of DoC Operating Units' IT Architecture Processes at Different Maturity Levels[1]

1. **Architecture Process:** Is there an established IT Architecture process?

2. **Architecture Development:** To what extent is the development and progression of the Operating Units' IT Architecture documented?

3. **Business Linkage**: To what extent is the IT Architecture linked to business strategies or drivers?

4. **Senior Management Involvement**: To what extent are the senior managers of the Operating Unit involved in the establishment and ongoing development of an IT Architecture?

[1]**Meta Group, "Enterprise Process Maturity Model and the SEI Model", Enterprise Architecture Strategies, File 16, July 28, 1998**

Characteristics of DoC Operating Units' IT Architecture Processes at Different Maturity Levels[1]

Enterprise Architecture

5A. **Operating Unit Participation:** To what extent is the IT Architecture process accepted by the Operating Unit?

5B. **Operating Unit Participation:** To what extent is the IT Architecture process an effort representative of the whole organization?

6A. **Architecture Communication:** To what extent are the decisions of IT Architecture practice documented?

6B. **Architecture Communication:** To what extent is the content of the IT Architecture made available electronically to everybody in the organization?

6C. **Architecture Communication:** To what extent is architecture education done across the business on the IT Architecture process and contents?

[1]Meta Group, "Enterprise Process Maturity Model and the SEI Model", Enterprise Architecture Strategies, File 16, July 28, 1998

Enterprise Architecture

Characteristics of DoC Operating Units' IT Architecture Processes at Different Maturity Levels[1]

7. **IT Security:** To what extent is IT Security integrated with the IT Architecture?

8. **Governance:** To what extent is an IT Architecture governance (governing body) process in place and accepted by senior management ?

9. **IT Investment and Acquisition Strategy:** To what extent does the Enterprise Architecture influence the IT Investment and Acquisition Strategy?

IT Architecture Capability Maturity Score

Architecture Characteristic	Score
1.	
2.	
3.	
4.	
5. $= (5A+5B)/2$	
6. $= (6A+6B+6C)/3$	
7.	
8.	
9	

Score $= \Sigma\,(1...9)/9$

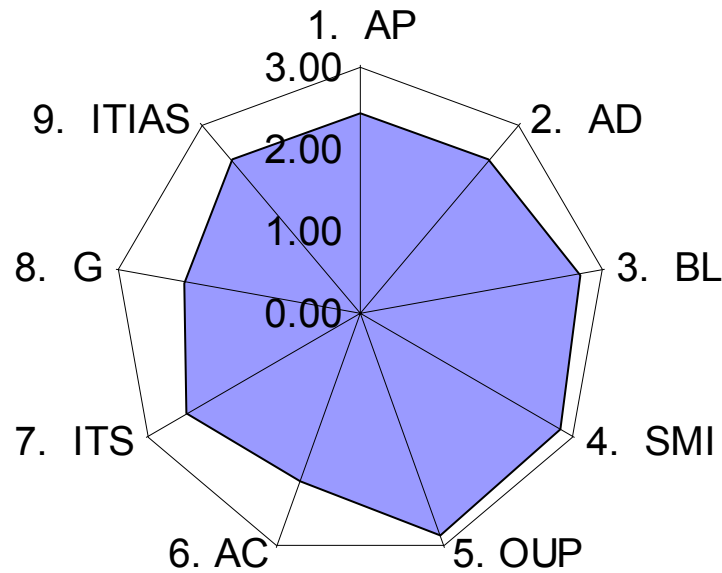# IT Architecture Capability Maturity Score

METHOD #1

- This method calculates an Operating Unit's mean Architecture Capability Maturity Level.
- First: map the IT Architecture Characteristic with each of the six Maturity Levels
- Second: sum the occurrences of each Maturity Level
- Third: divide the sum by nine IT Architecture Characteristics
- The example below indicates that the Operating Unit achieves a Maturity Level of 2.66

Architecture Characteristic	Level Accomplished
1	3
2	2
3	4
4	3
5	1
6	3
7	5
8	2
9	1
Total	24/9 = 2.66 (out of 5)

IT Architecture Capability Maturity Score

NOAA IT Architecture Capability Maturity Score - FY 2002
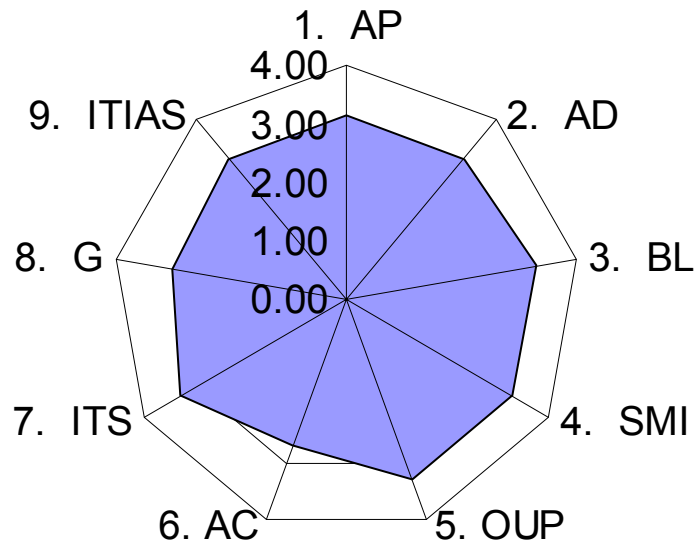

Radar chart with axes:
- 1. AP
- 2. AD
- 3. BL
- 4. SMI
- 5. OUP
- 6. AC
- 7. ITS
- 8. G
- 9. ITIAS

Scale: 0.00, 1.00, 2.00, 3.00

Legend: ■ NOAA Average Score

IT Architecture Capability Maturity Score

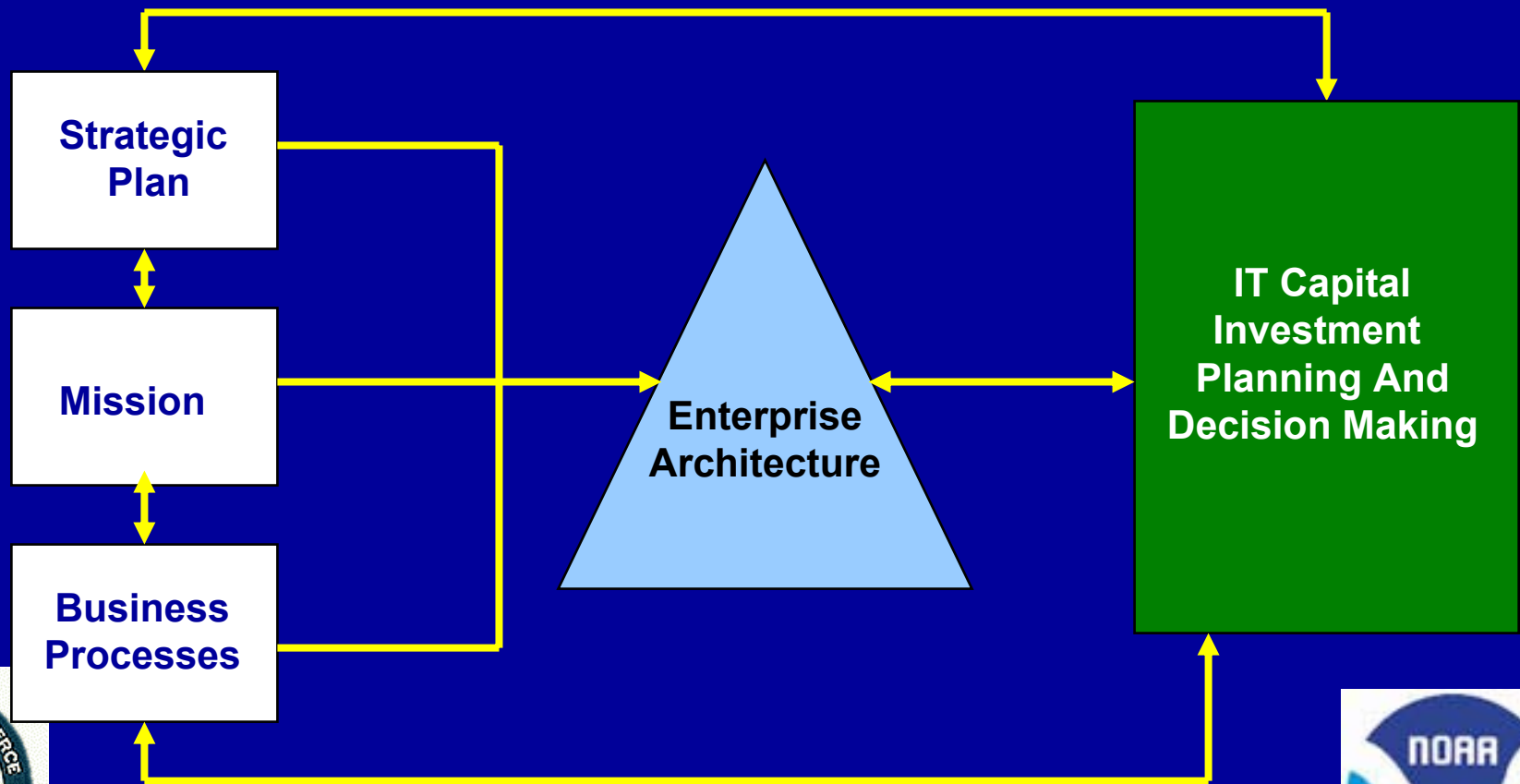**Enterprise Architecture**

Outline

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Vision

To Clearly Link Strategic Plan, Mission, and Business Processes to Enterprise Architecture to Capital IT Investment Planning and Decision Making

Enterprise Architecture

Strategic Plan

Mission

Business Processes

Enterprise Architecture

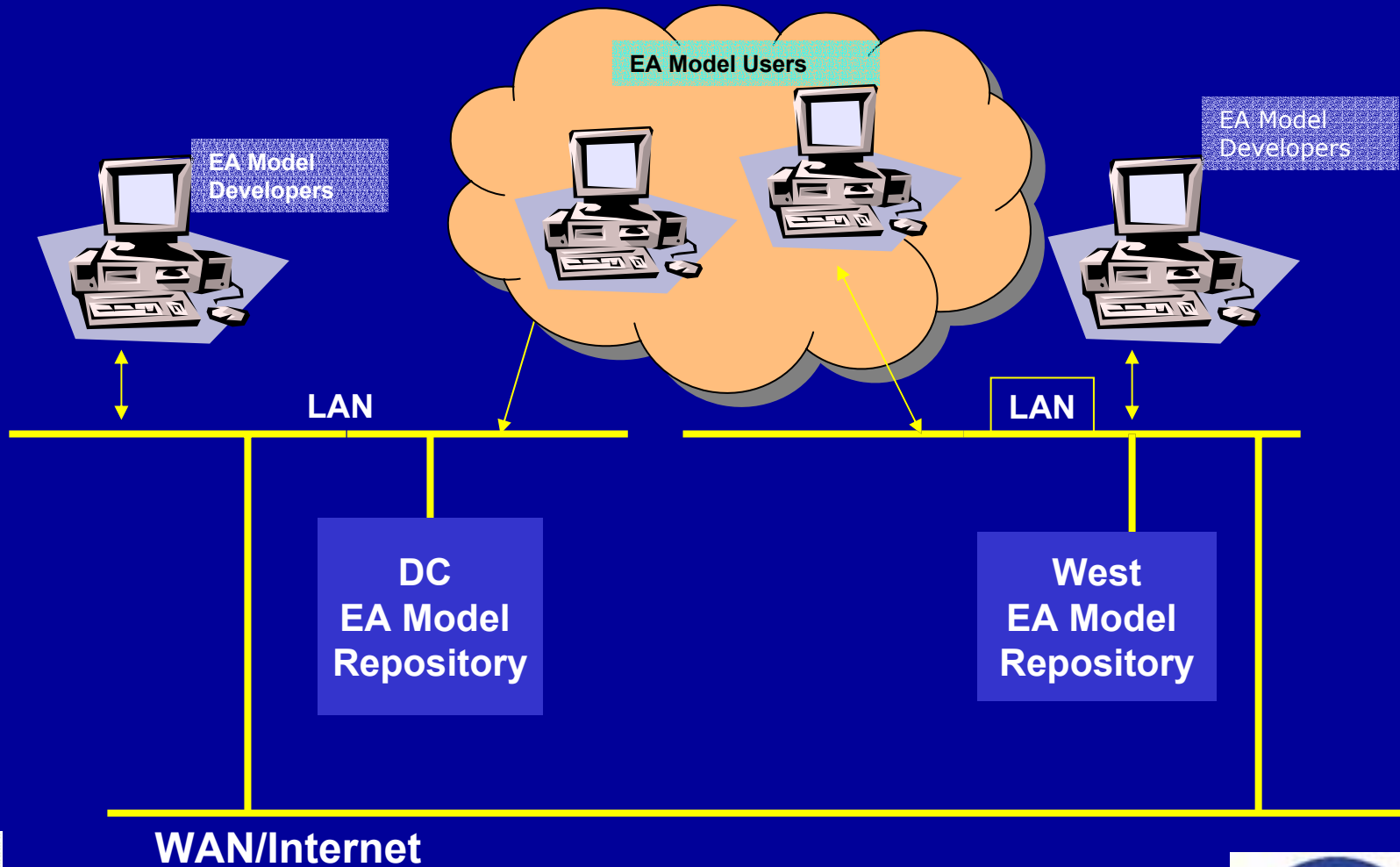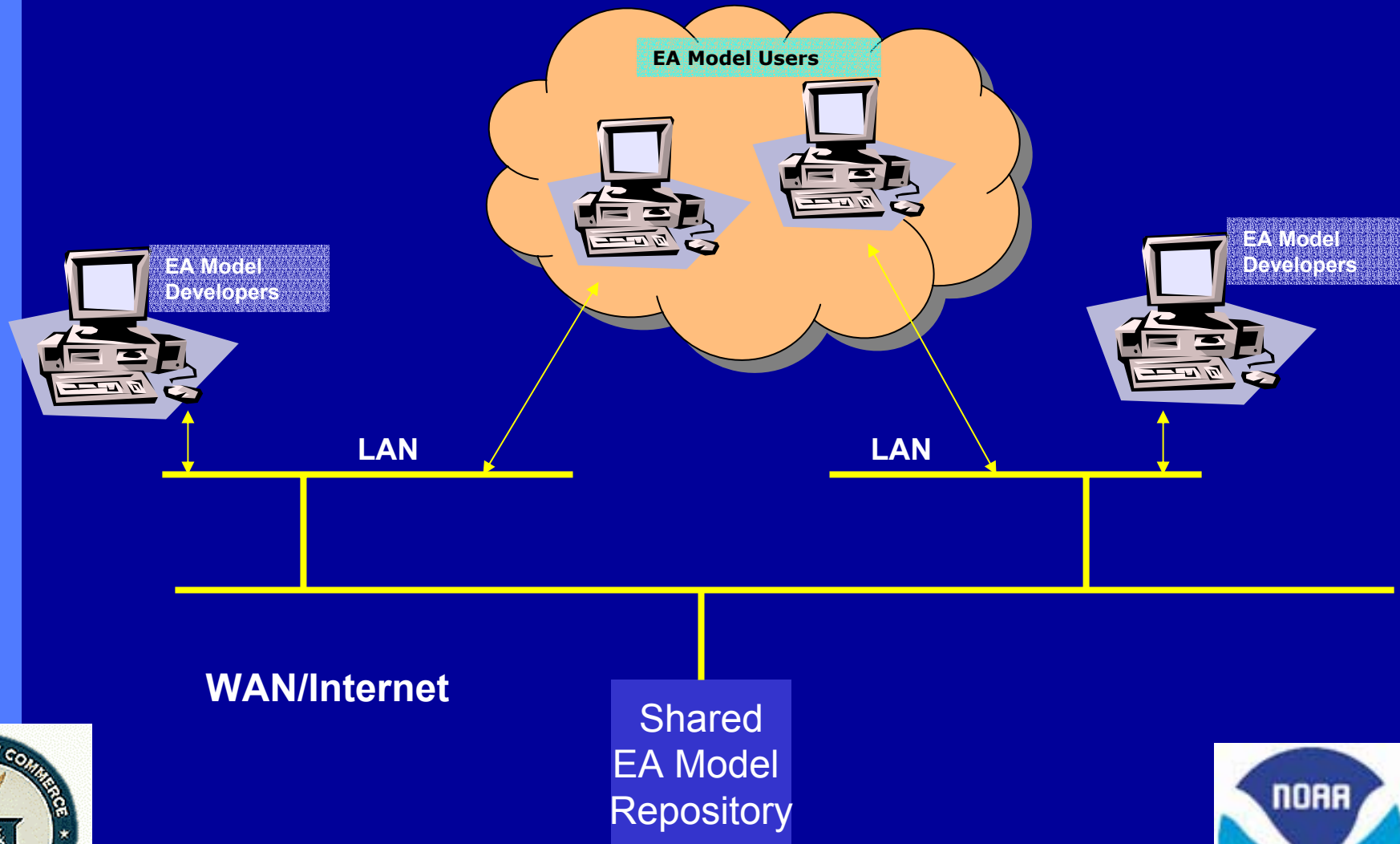IT Capital Investment Planning And Decision Making

Process

- **Defined EA modeling toolset requirements**
- **References used**
  - **Vendor marketing materials and websites**
  - **Research papers**
  - **Evaluation reports**
    - U. S. Census Bureau Enterprise Architecture Tools & Templates
    - EPA Architecture Tool Options Evaluation Report
  - **GSA Schedule**
- **Briefed DoC CIO and IT Architecture Affinity Group**
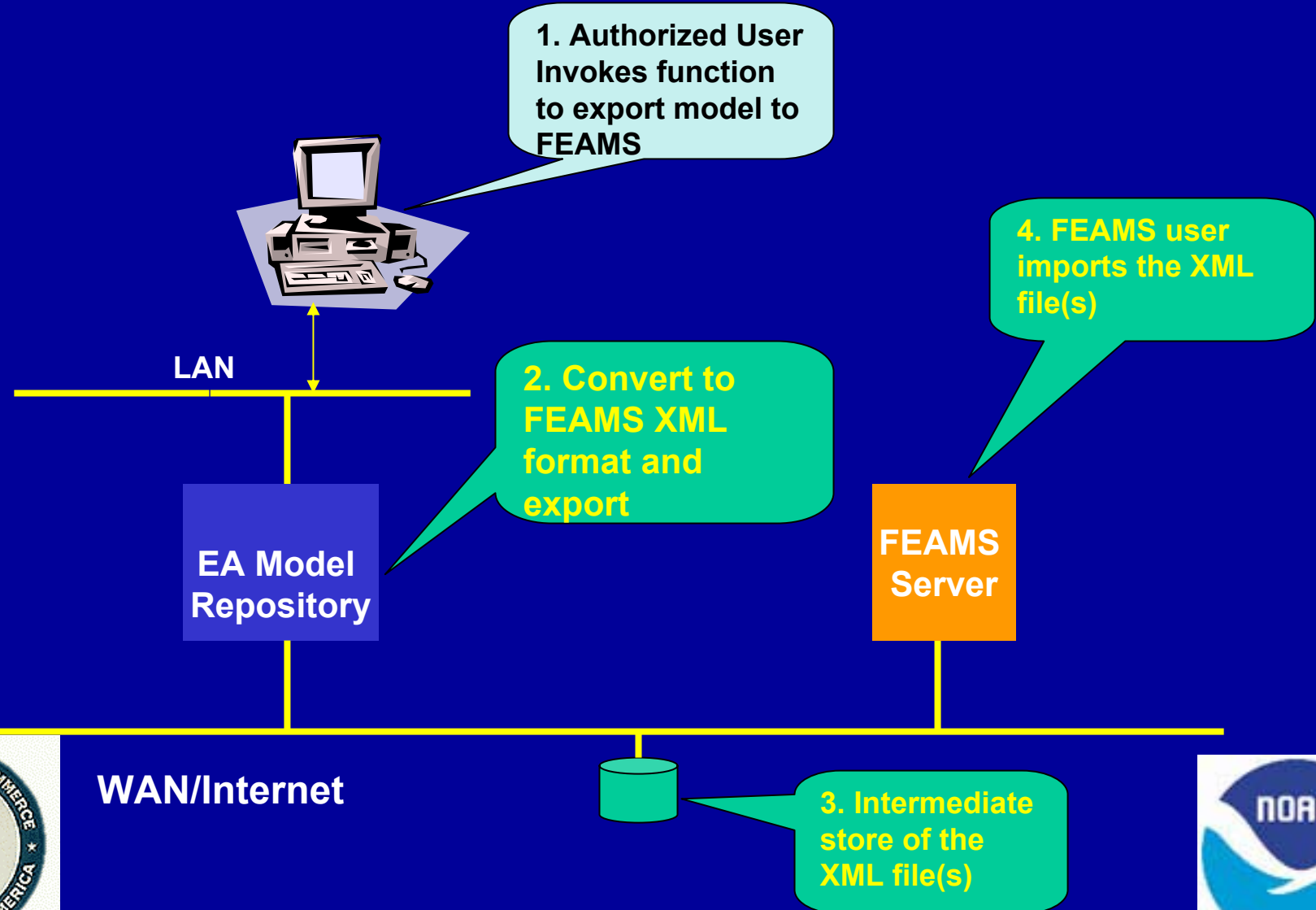- **Briefed DoC CIO Council**

Distributed Repository – Physical View

Enterprise Architecture

EA Model Users

EA Model Developers

EA Model Developers

LAN

LAN

DC EA Model Repository

West EA Model Repository

WAN/Internet

Distributed Repository – Logical View

Enterprise Architecture

EA Model Users

EA Model Developers

EA Model Developers

LAN

LAN

WAN/Internet

Shared EA Model Repository

FEAMS Interface

Enterprise Architecture

1. Authorized User Invokes function to export model to FEAMS

4. FEAMS user imports the XML file(s)

LAN

2. Convert to FEAMS XML format and export

EA Model Repository

FEAMS Server

WAN/Internet

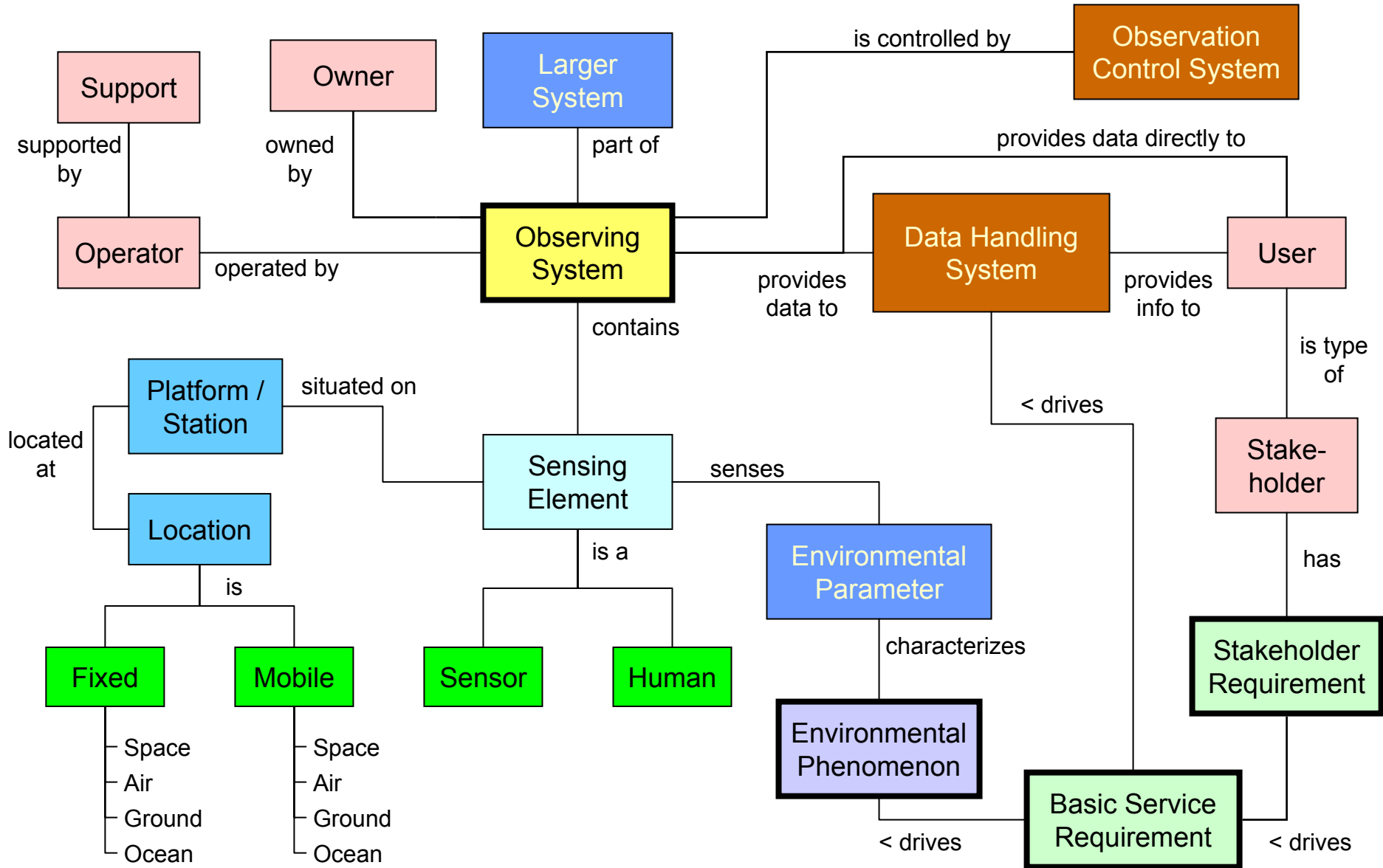3. Intermediate store of the XML file(s)

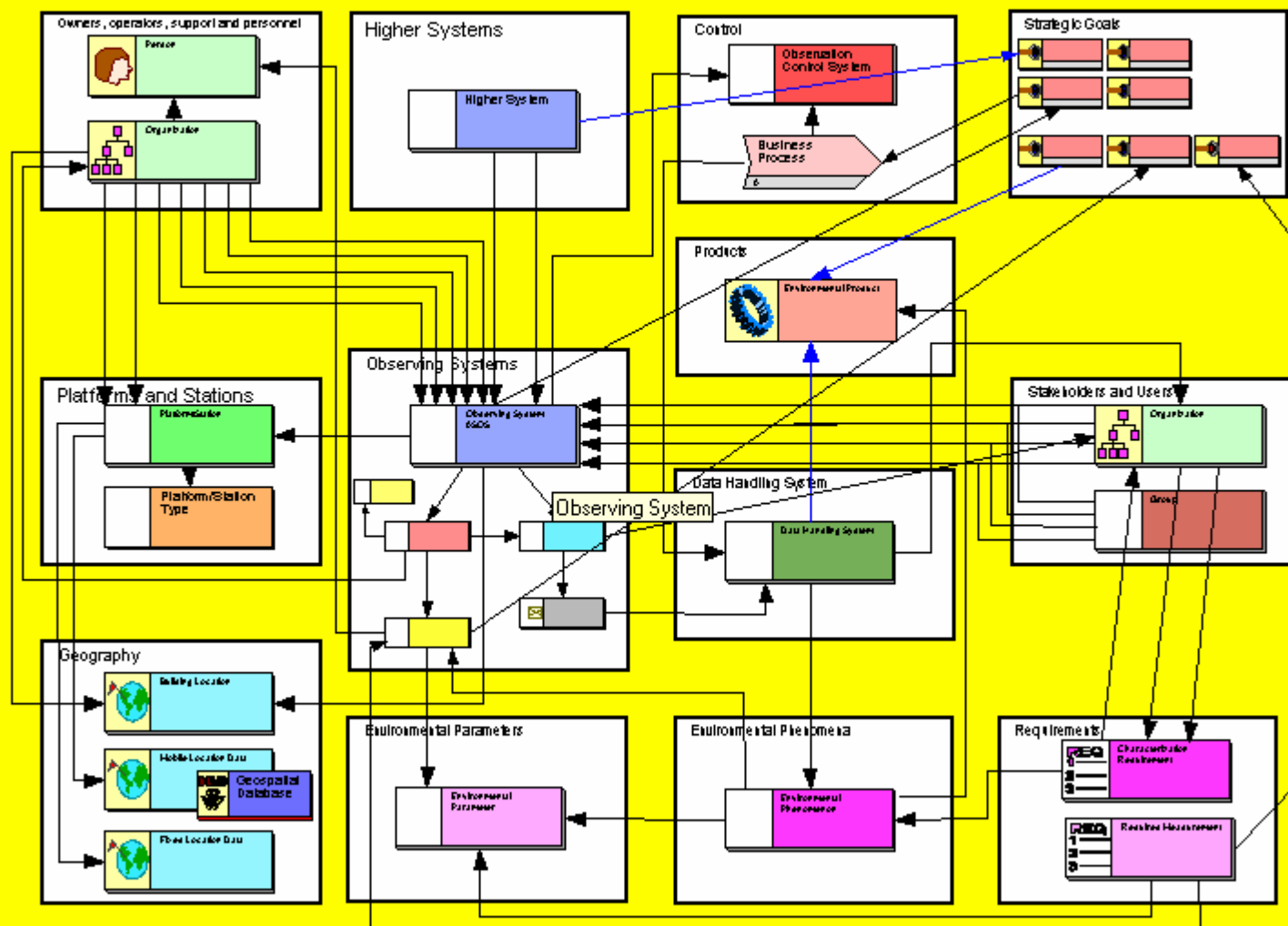06062003 - 53

Purpose of Architecture
Business Queries

- **Display all observing systems owned by a particular line office.**

- **Display all Climate requirements that are not being met by current observing systems.**

- **What observing systems are supporting our ability to measure the heat content of the ocean (or other scientific query)?**

  - What additional observing systems do we need to answer this particular question?

- **Display all organizations that own buoys.**

- **What observing systems are associated with each NOAA strategic goal?**
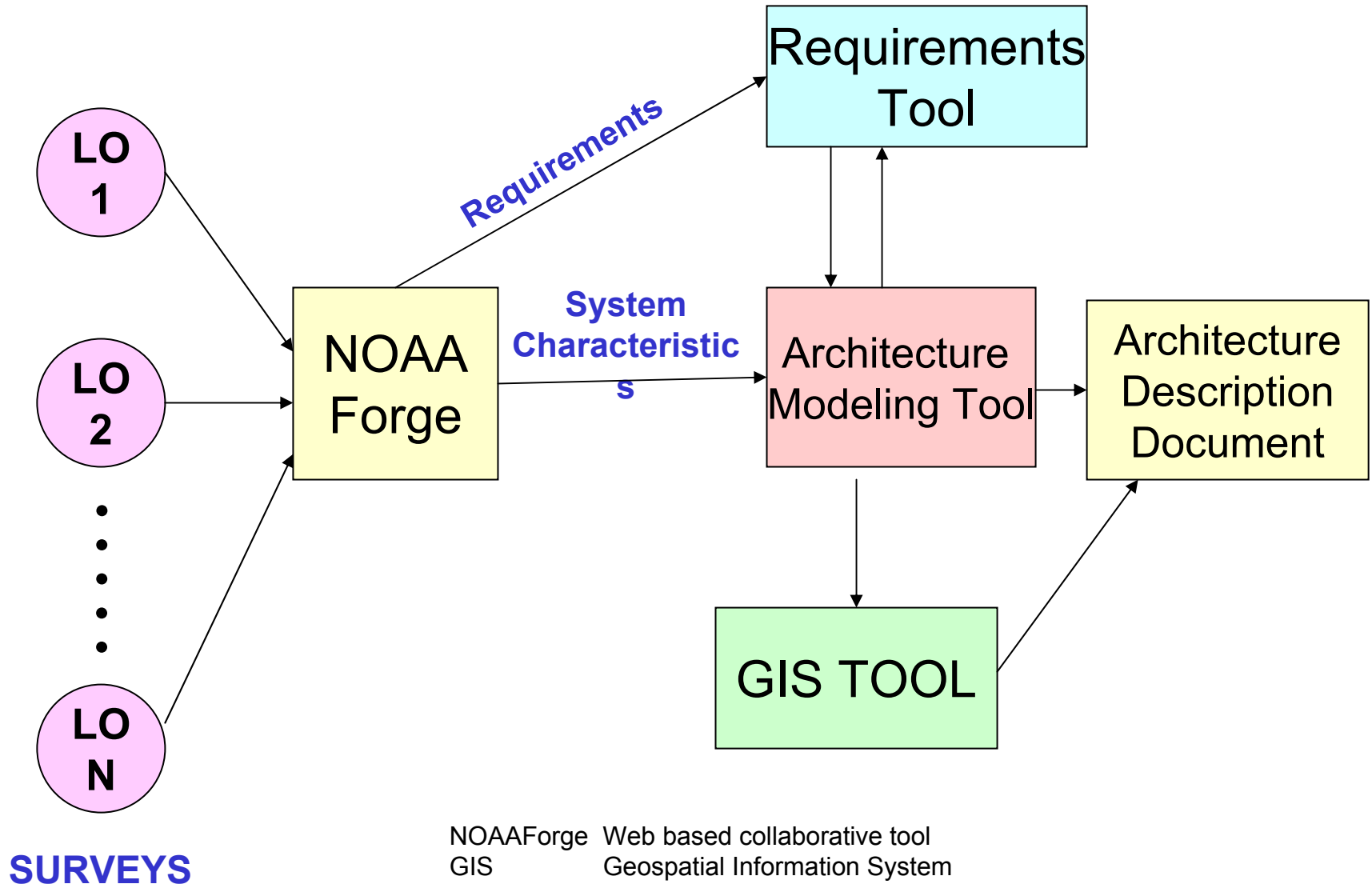
NOAA Observing Architecture Entity Relationship Diagram

Observing System Architecture

NOSA Data Flow

LO 1

LO 2

•
•
•
•

LO N

SURVEYS

NOAA Forge

Requirements

System Characteristics

Requirements Tool

Architecture Modeling Tool

Architecture Description Document

GIS TOOL

NOAAForge   Web based collaborative tool
GIS   Geospatial Information System

Back   Forward   Reload   Home   Search   Netscape   Print   Security   Shop   Stop

Bookmarks   Location: http://class1.nesdis-hq.noaa.gov/survey/page.php?group_id=47&instance_id=82&page_id=1

Instant Message   Internet   Lookup   New&Cool   Current Stuff   Markets   NOAAForge   NOAA jnm email   NOSA help

NOSA - Surveys

Main | Homepage | Forums | Bugs | Support | Tasks | Docs | **Surveys** | News | Files |

Admin

Summary

READ ONLY - You are not a member of this document

Identifying Information - NWS-ASOS

This page covers summary identifying information for the observing system. This survey should be filled out for each "type" of Observing System, not for each "instance". There might be hundreds of instances for a given type. The instances will be identified on the Platform/Station survey form by either loading in a file with location data, or pointing to a database that contains the location data.

1. System Name (Clarification[0]/ Comment[0]/ Footnotes[0])

Enter the name of this observing system.

Automated Surface Observing System

2. Acronym (Clarification[0]/ Comment[0]/ Footnotes[0])

Enter the acronym that this system is known by.

ASOS

3. Identifier (Clarification[1]/ Comment[0]/ Footnotes[0])

Enter the system's identifier, if any. For example, WSR-88D is the identifier for NEXRAD.

N/A

4. Description (Clarification[2]/ Comment[0]/ Footnotes[0])

The ASOS is a fully automated weather observing system. The system provides meteorological information to a wide variety of users.

Enter a high-level description of this Observing System. (Details will be provided on subsequent survey pages.)

Logged In: martin

Logout
Register New Project
Account Maintenance

Change My Theme
My Personal Page

Bookmark this Page

Project: NOSA

Project Summary

Project Admin

Projects

Project Map
New Releases
Code Snippet Library

NOAAForge

Site Documentation
Discussion Forums
Phone List
Dictionary
Acronyms

Contact Us

Search

Project

☑ Require All Words

Search

Document: Done

Enterprise Architecture

File Edit View Insert Arrange Tools Window Help

NOAA Enterprise Architecture (draft 12/16/02)

Change

Business Strategy

Business Operation

Observing Systems

Physical Applications

IT Infrastructure

NOAA EA / Main / BsnsViewofAppl / ApplImpl / TransitionView / InfoView / ITReqView / ApplFuncView / StratVal / Proc-Appl / ArchEr

R/W   Zoom: 0.3740   17:32

NOAA Enterprise Architecture (draft 12/16/02)

Change

Transition Strategy

Transition Planning

Transition Projects

Business Strategy

Business strategy - what?

Business strategy- how?

Information Needs (Key Questions)

Business Operation

Users & Stakeholders

Requirements

Products

Business Processes
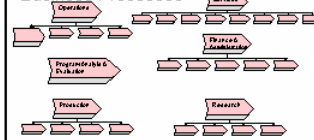
Organization
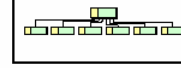
Location Types

Key Individuals

Geography

Observing Systems

Higher Systems

Platforms/ Stations

Observing Systems

Sensing Elements

Measurement

Environmental Parameters

Environmental Phenomena

Physical Applications

Application types

Business Applications

Prediction Modeling

Product Generation

Assessments

Distribution

Archive

Research

IT Infrastructure

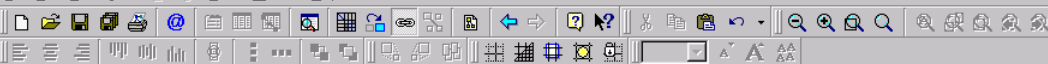**Gateway**   **NNDC**   **FSL Superco**   **AWIPS**   **GFDL Superco**   **CEMSCS**   **SARSAT**   **NCEP**

Untitled2 \ NOAA EA \ Main \ BsnsViewofAppl \ ApplImpl \ TransitionView \ InfoView \ ITReqView \ ApplFuncView \ StratVal \ Proc-Ap

R/W   Zoom: 0.3740   10:39

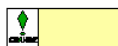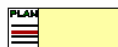File Edit View Insert Arrange Tools Window Help

NOAA Enterprise Architecture (draft 12/16/02)

Change

Transition Strategy

Transition Planning

Transition Projects

PROJECT CLASS

PROJECT NCEP Backup

PROJECT NESDIS CIP

Business Strategy

Business strategy - what?

Vision (Mission) Goals Objectives

Business strategy- how?

Strategies Success Factors Key Performance Indicators Strategic ...

Information Needs (Key Questions)

Drone Layer Ocean Regional Globalspace ofRegional

Business Operation

Users & Stakeholders
Weather Forecasters Airline Pilots

Requirements

Products
Times Marine
Forecast Reports
Fishery Research
Aviation Observ...
Climat

Business Processes
Services
Operations
Research Assessments
Programmable & Evaluation
Production Research

Organization

Key Individuals

Location Types

Geography

Observing Systems

Higher Systems
National Airspace NPOESS

Platforms/ Stations
ASOS Station NEXRAD Station
POES Satellite GOES Satellite

Observing Systems
ASOS NEXRAD POES GOES

Sensing Elements

Measurements
Precipitation Accumulation Precipitation
Land Surf Temp Wind Direction
Wind Speed Sea Surf Temp

Environmental Parameters
Precipitation Land Surf Temp
Wind Direction Wind Speed
Sea Surf Temp

Environmental Phenomena
Rain Snow
Service Temperature Wind
Clouds Aerosols

Physical Applications

Application types
Product Distribution
Assessment Archive
Prediction Research

Business Applications

Prediction Modeling
GFS 4th Etc
HRF HHS
ETB RdHS

Product Generation

Assessments

Distribution

Archive

Research

IT Infrastructure

Gateway NNDC FSL Supercomput AWIPS GFDL Supercomput CEMSCS SARSAT NCEP

R/W   Zoom: 0.3740   10:45

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Back Forward Reload Home Search Netscape Print Security Shop Stop

Bookmarks Location: http://mapdevel.ngdc.noaa.gov/website/naa/nosa/viewer.htm?layers=010000000000000001&ActiveLayer=1

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NOAA Satellites and Information
NOAA's National Environmental, Satellite, Data, & Information Service

NOAA Observing System Architecture
(NOSA)

NOAA

privacy statement

legend   layers

Legend

NWS BOY

OAR GSLN

toolbar
help

Map Generated by the National Geophysical Data Center

0   4963mi

Refresh Map Now

Zoom Out   About the Database   help

Document: Done

Enterprise Architecture Components
Census Enterprise Architecture contains …

- *Architectural Principles*

- *Standards Profile and Technical Reference Model*

- *Architectural Views:*

    Functional, Information,

    Organizational, Infrastructure

- *Baseline and Target Views*

- *Gap Analysis and Migration*

- *Strategic Plans*

- *Business and Technology Drivers*

- *Federal Lines of Business Linkage*

- *CIO Top Projects (and ways to track/measure)*

- *EA Glossary and Best Practices*

- *EA Roadmap, Governance and*

    Communication Plans

- *An EA Primer*

- *An EA Reader's Roadmap*

… and the capability to access and utilize the information.

Business questions being answered

Our Tools Analysis included a set of Census Business Questions to be answered. Some examples of these include …

Business Question	Decision Support Model View(s)	Objects in view
Which system support components should be upgraded or modernized?	**Baseline, Transition Planning**	**Infrastructure, Business Process, Node Connectivity, System Interface, Stds Profile**
What impact would a sudden budget change (surplus or deficit) have on funded programs or projects?	**IT Business Plan, Baseline Architecture, Transition Planning**	**ITBP, Strategic Goal, Essential Elements[1]**
How do we communicate the enterprise standards, models, and processes to our internal and external customers?	**Standards - Infrastructure, Application, Data, Security**	**TRM, Standards Profile**
How do we identify process touchpoints and analyze the information flow across those intersections.	**Organizational, Functional, Architecture Process - Review**	**Node Connectivity Diagram, Business Process Diagram**
What is the impact of an internal change in a core business function on applications, infrastructure, and organizations?	**Functional, Infrastructure**	**Business Process Diagram, System Interface Description, Organization Chart**
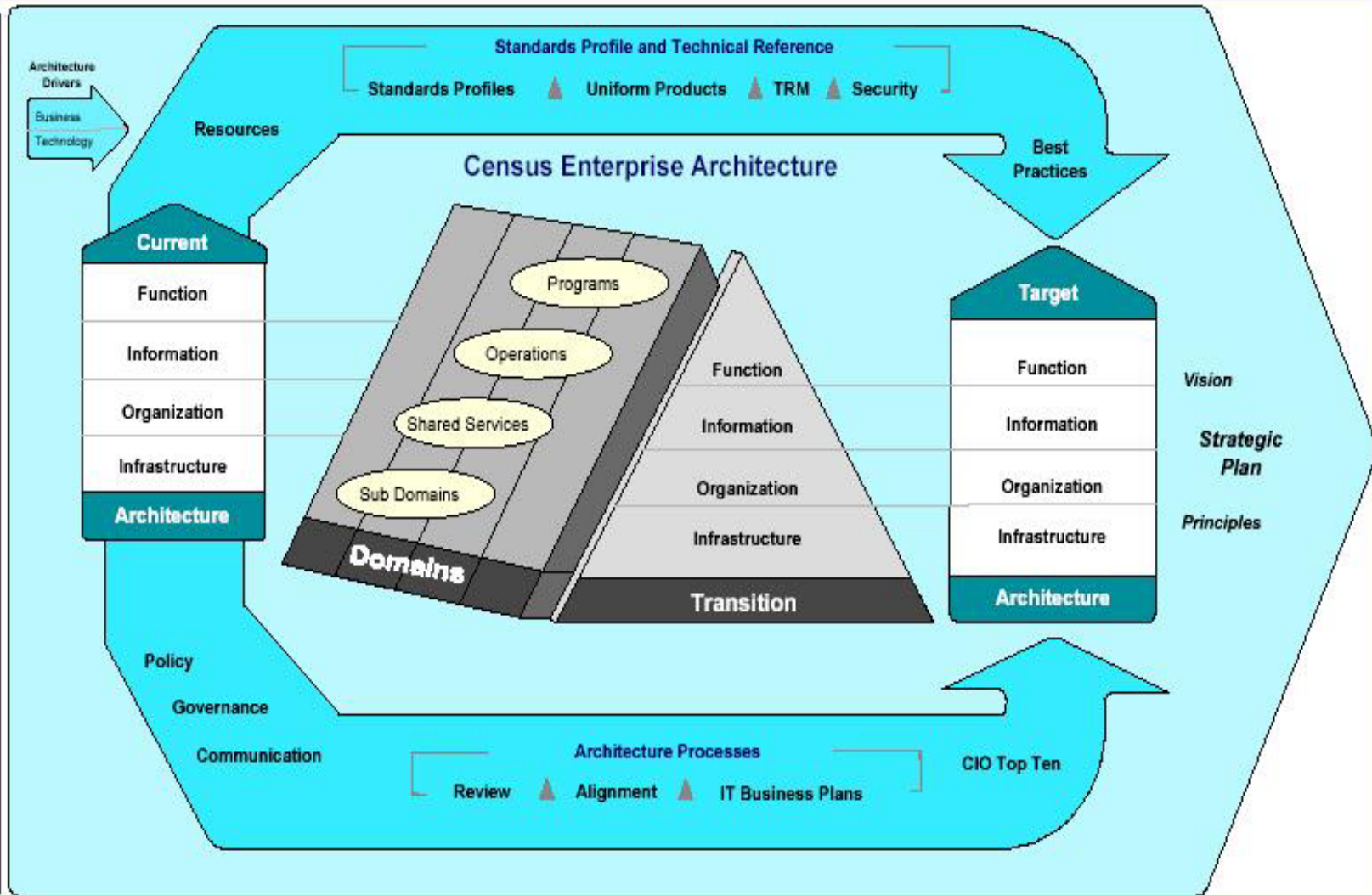
Enterprise Architecture
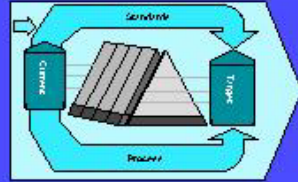
Welcome to the Census Enterprise Architecture

From this page you can navigate to information contained in the Census Enterprise Architecture. To learn more about our program or review some basic EA concepts, check out our online documents. If you're new to our architecture model, click on the reader's roadmap to learn what areas will help you get the answers you're looking for. Or if you prefer, you can navigate directly to the model using the quick links below.

Enterprise Architecture Vision

Support the core business of the Bureau
Function as a strategic resource
Align business and technology
Leverage shared assets
Build internal and external partnerships
Optimize the value of IT services

Online Documents

- EA Overview
- Navigation Help
- Census EA Contacts
- EA Primer
- EA Model: Reader's Roadmap

Quick Links

- EA Model: CEAF
- EA Model: Principles
- EA Model: Reference Documents
- EA Model: Standards and Uniform Products
- EA Model: Priority Projects
- EA Model: Target Initiatives

cture

Reader's Roadmap

Click to navigate to view

| CEAF View | Welcome Page |

Executive Views

Executive Summary Focus

Navigate through the model using these links to open high level views of the enterprise. Key areas are Strategic Plans, Business Cases, Major Initiatives, and Project Status

- EA Model: Priority Projects
- EA Model: IT Business Plans
- EA Model: Strategic Planning
- EA Model: Target Initiatives
- Census EA Contacts

Business Views

Business and Program Focus

These views are centered around the business function and processes of the Bureau

- EA Model: CEAF
- EA Model: Lines of Business
- EA Model: Reference Documents
- EA Model: Functional Architecture
- EA Model: Priority Projects

Manager Views

Project and Initiative Focus

Open views of the model related to specific views of projects and initiatives.

- EA Model: CEAF
- EA Model: IT Business Plans
- EA Model: Reference Documents
- EA Model: Standards and Uniform Products
- EA Model: Priority Projects

Technical Views

Designers and Developer Focus

Drill into Standards, technical reference, infrastructure and metadata views of the architecture.

- EA Model: CEAF
- EA Model: Principles
- EA Model: Infrastructure Target
- EA Model: Technical Reference Model
- EA Model: Information Architecture

Operational Views

Compliance or Alignment Focus

Zoom to uniform products and standards, enterprise wide models, and compliance related processes.

- EA Model: CEAF
- EA Model: Principles
- EA Model: Reference Documents
- EA Model: Standards and Uniform Products
- EA Model: Priority Projects

Partner Views

Oversight and Information Focus

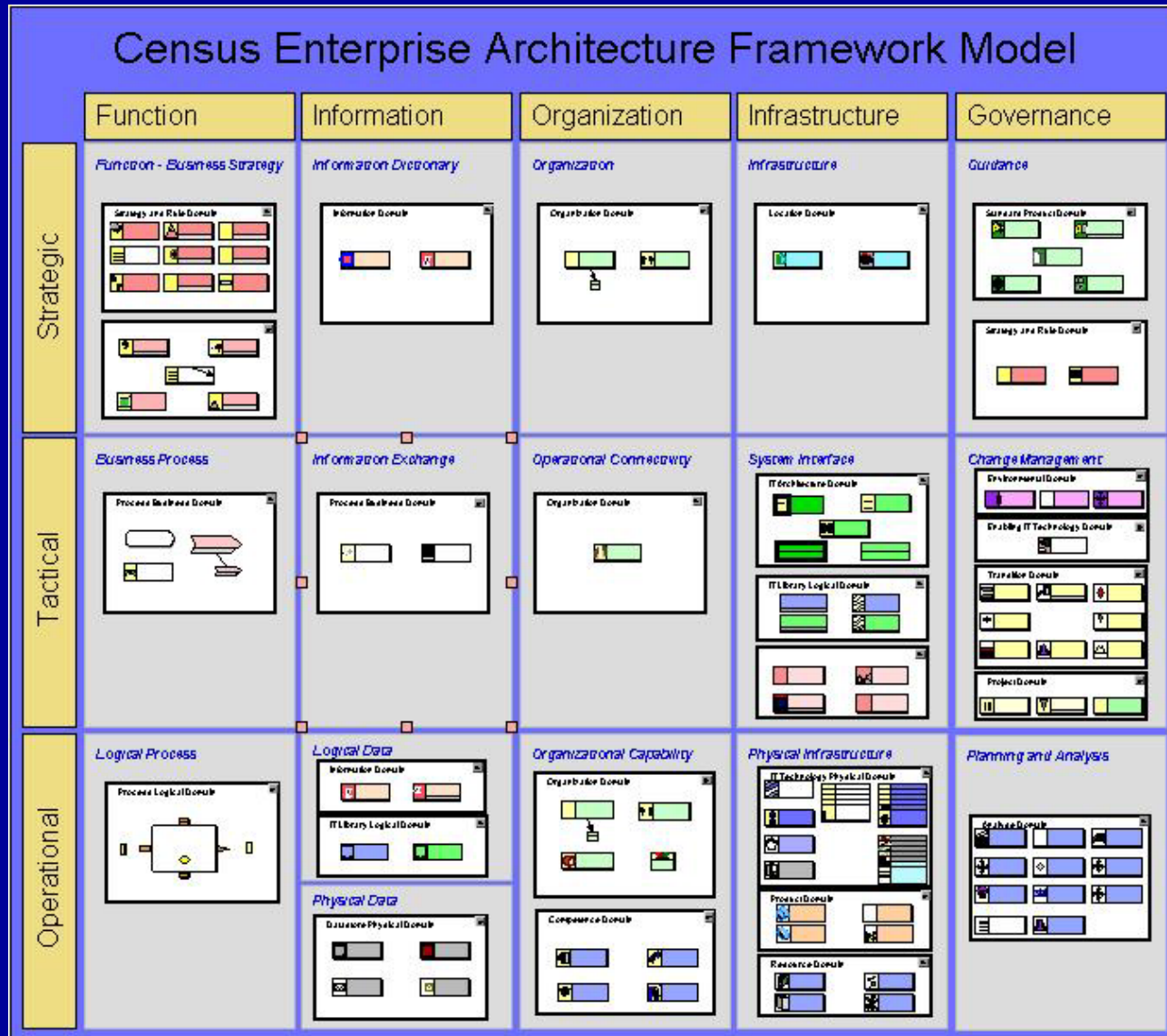View our reference materials, reference models, and governance processes with these links.

- EA Overview
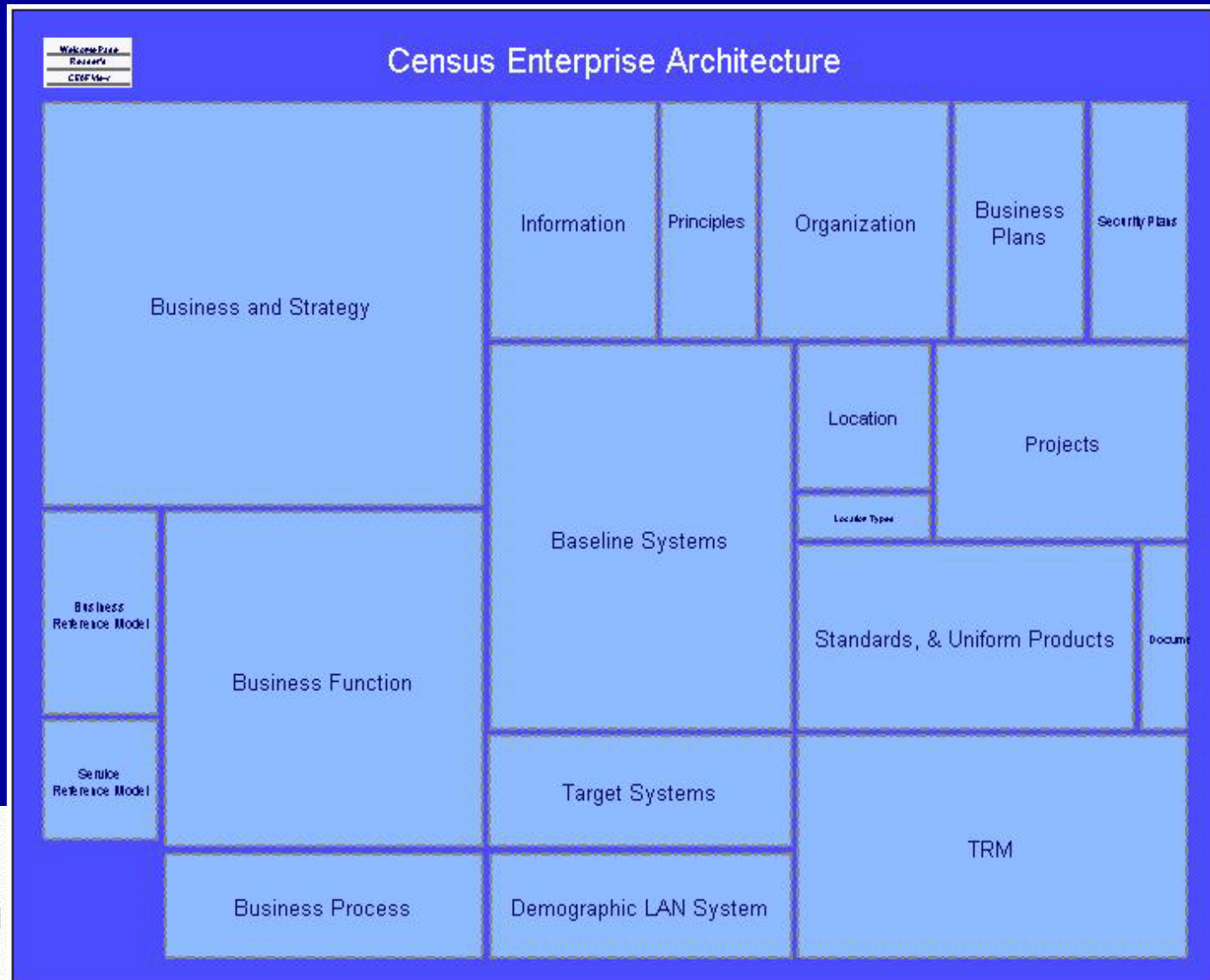- EA Model: Compliance
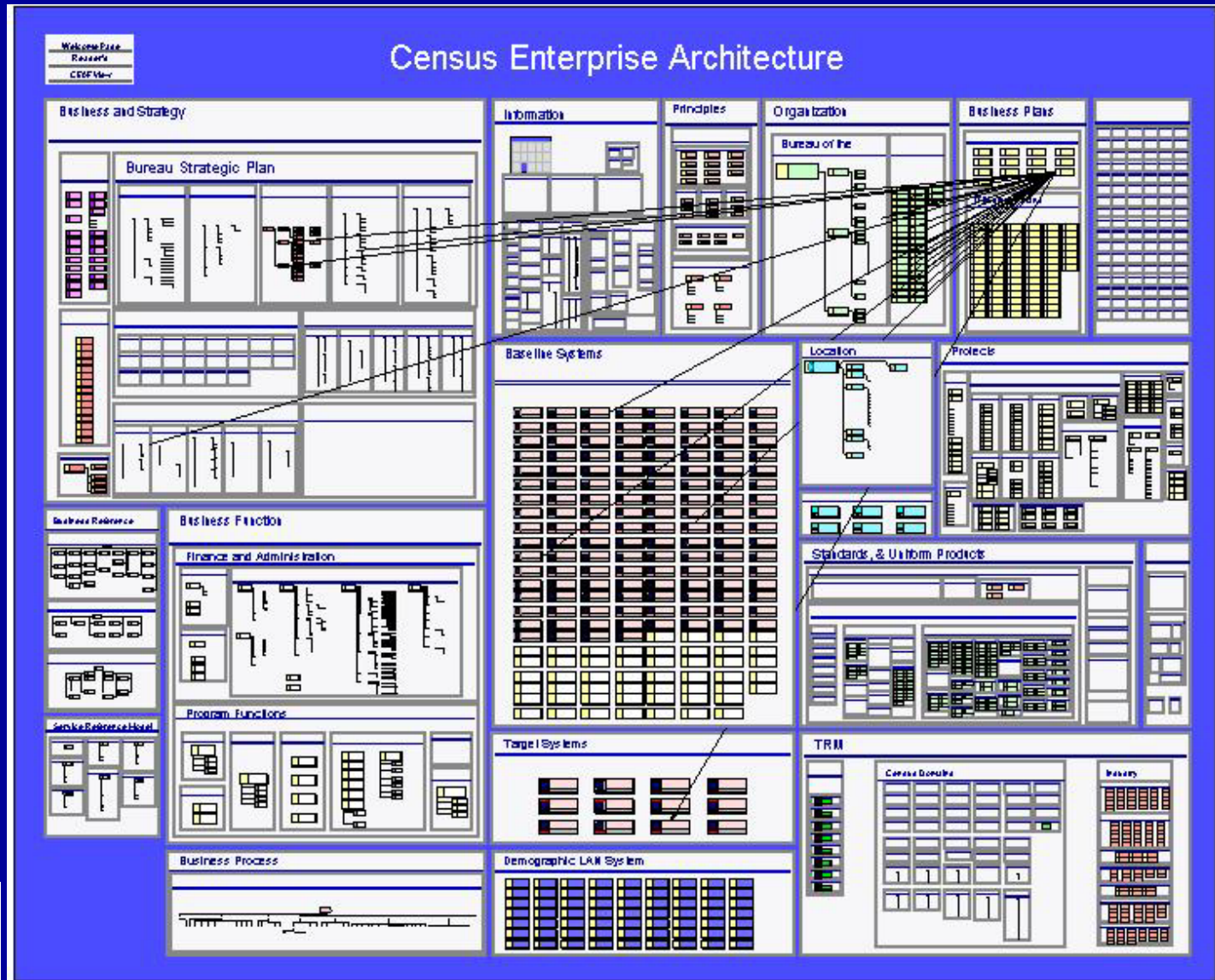- EA Model: Reference Documents
- Census EA Contacts
- Navigation Help

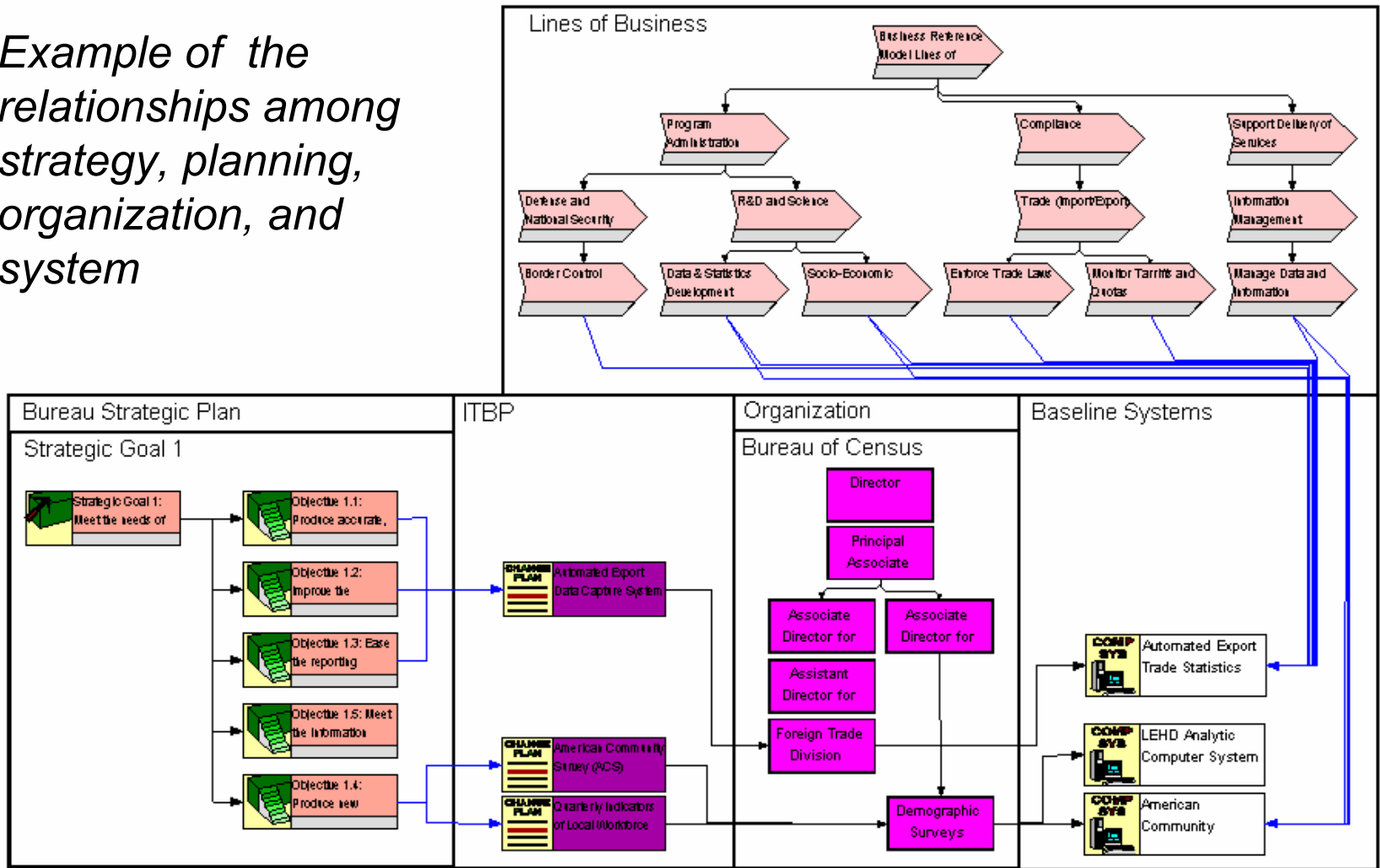**EA Tool – Example Framework Model**

Enterprise Architecture

Enterprise Architecture

Census Enterprise Architecture

Business and Strategy

Information | Principles | Organization | Business Plans | Security Plans

Business Reference Model

Service Reference Model

Business Function

Baseline Systems

Location

Location Types

Projects

Standards, & Uniform Products

Document

Target Systems

TRM

Business Process

Demographic LAN System

Enterprise Architecture

Enterprise Architecture
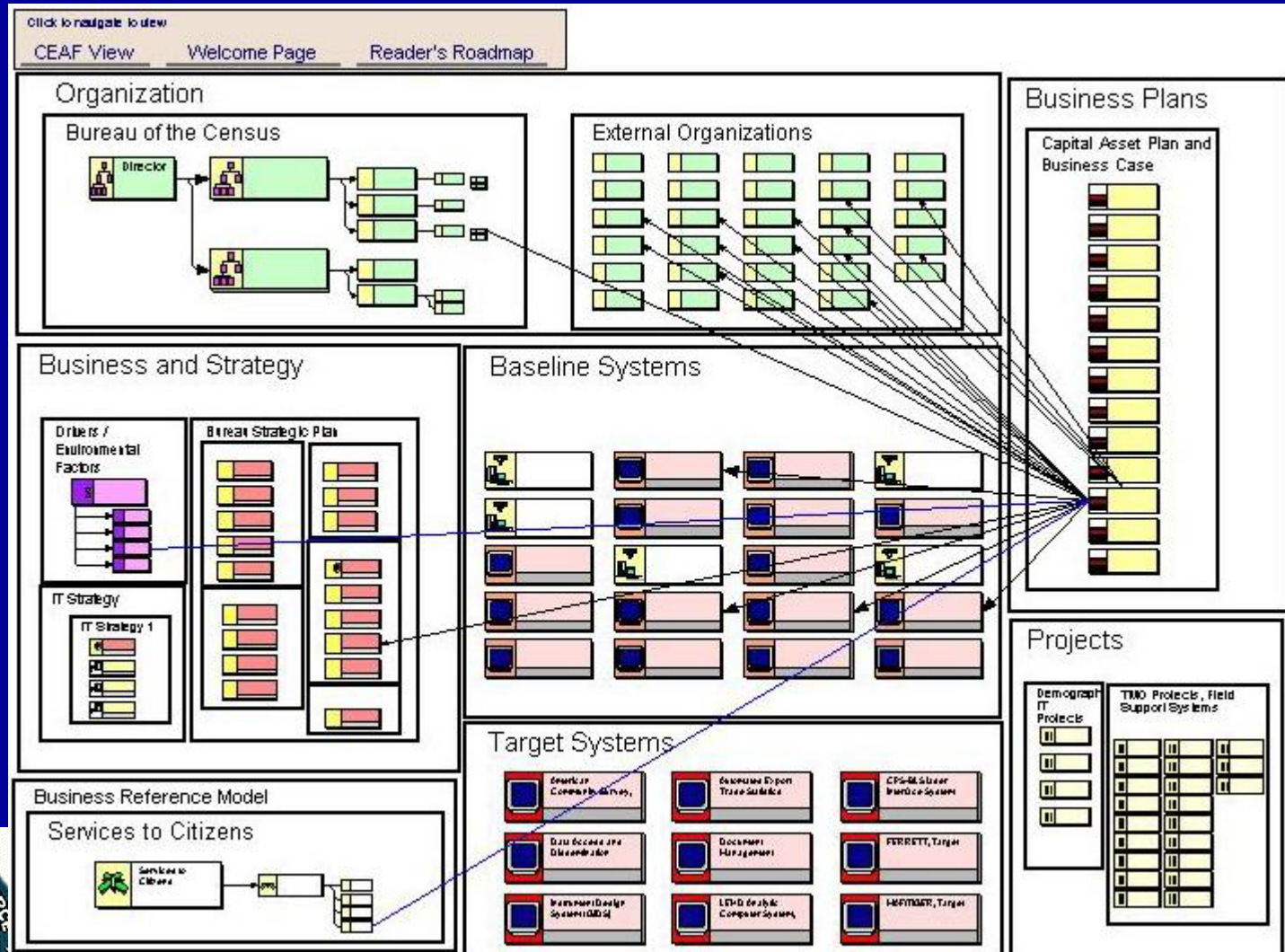
Example of the relationships among strategy, planning, organization, and system

Enterprise Architecture
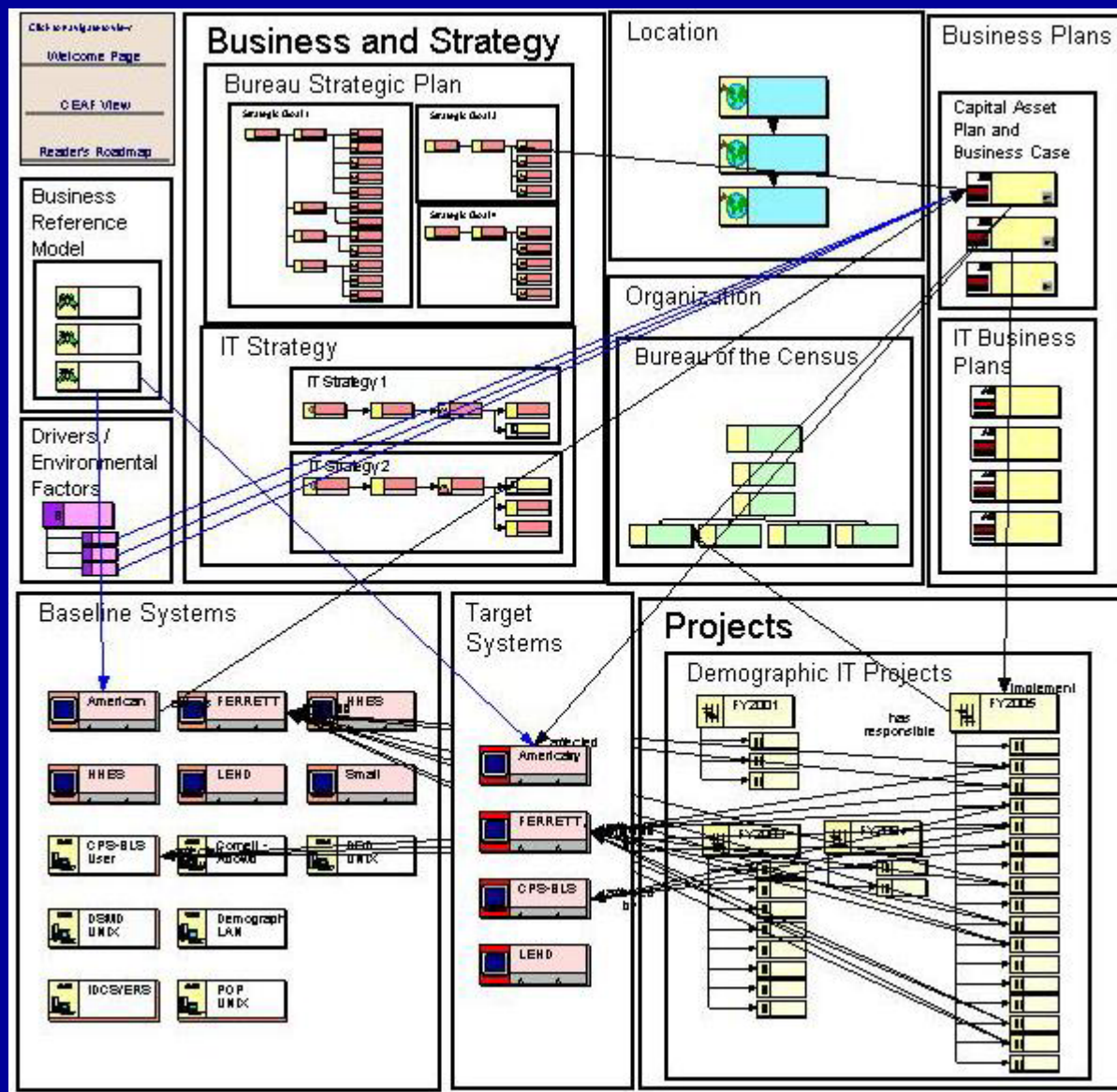
EA Tool Example – Capital Planning View

Enterprise Architecture

EA Tool Ex. – Infrastructure Transition Views

Enterprise Architecture

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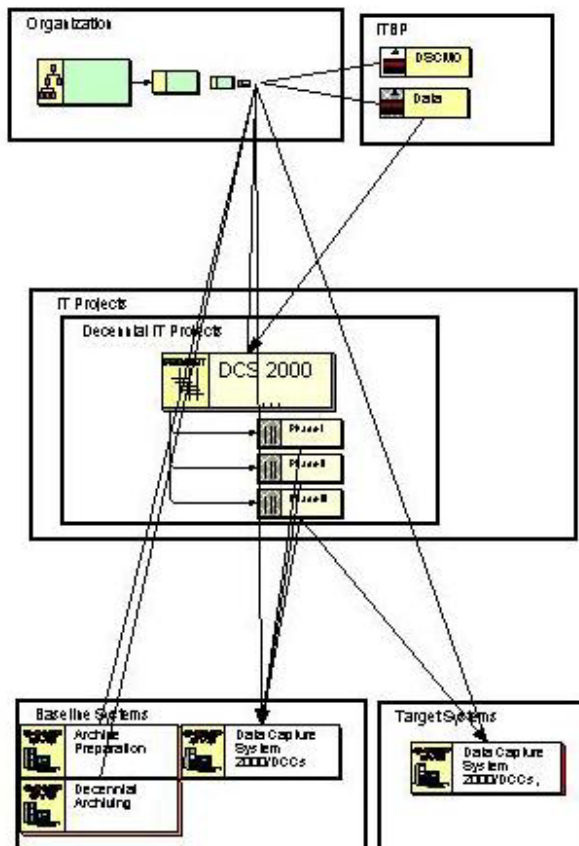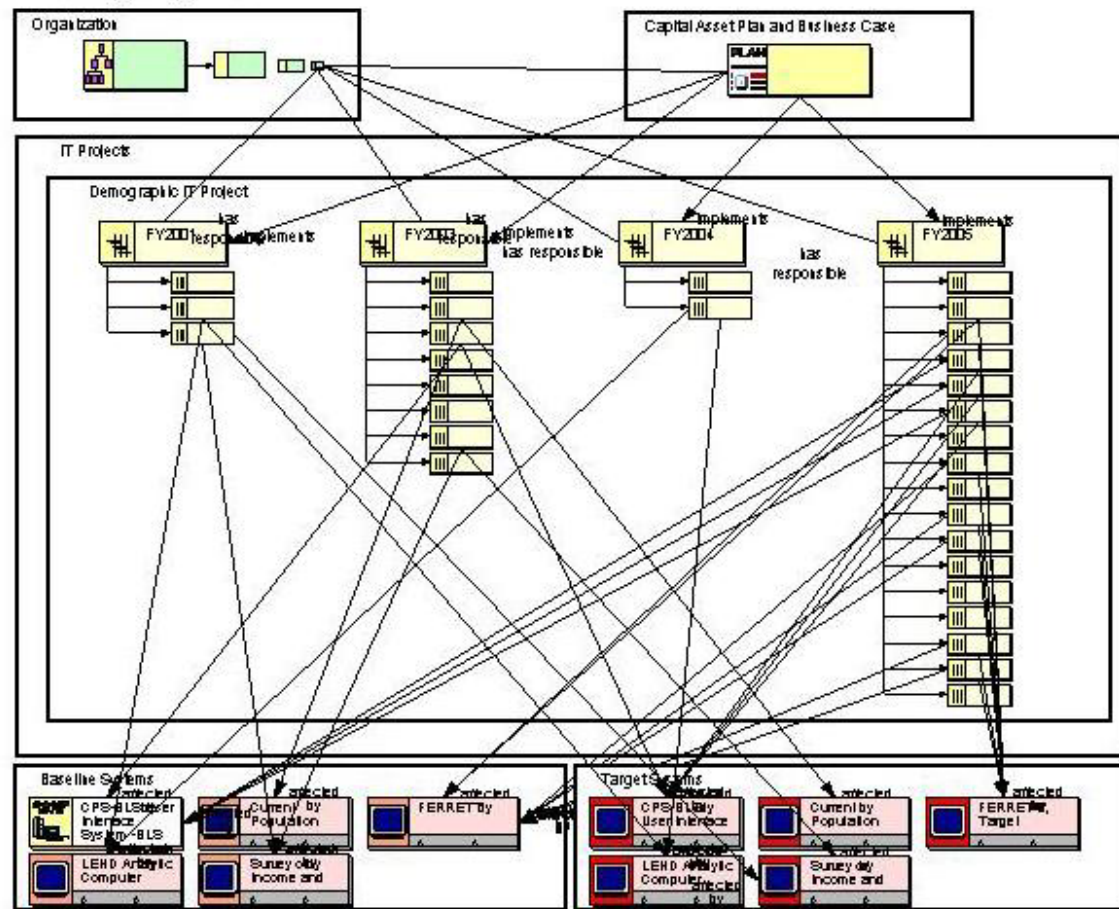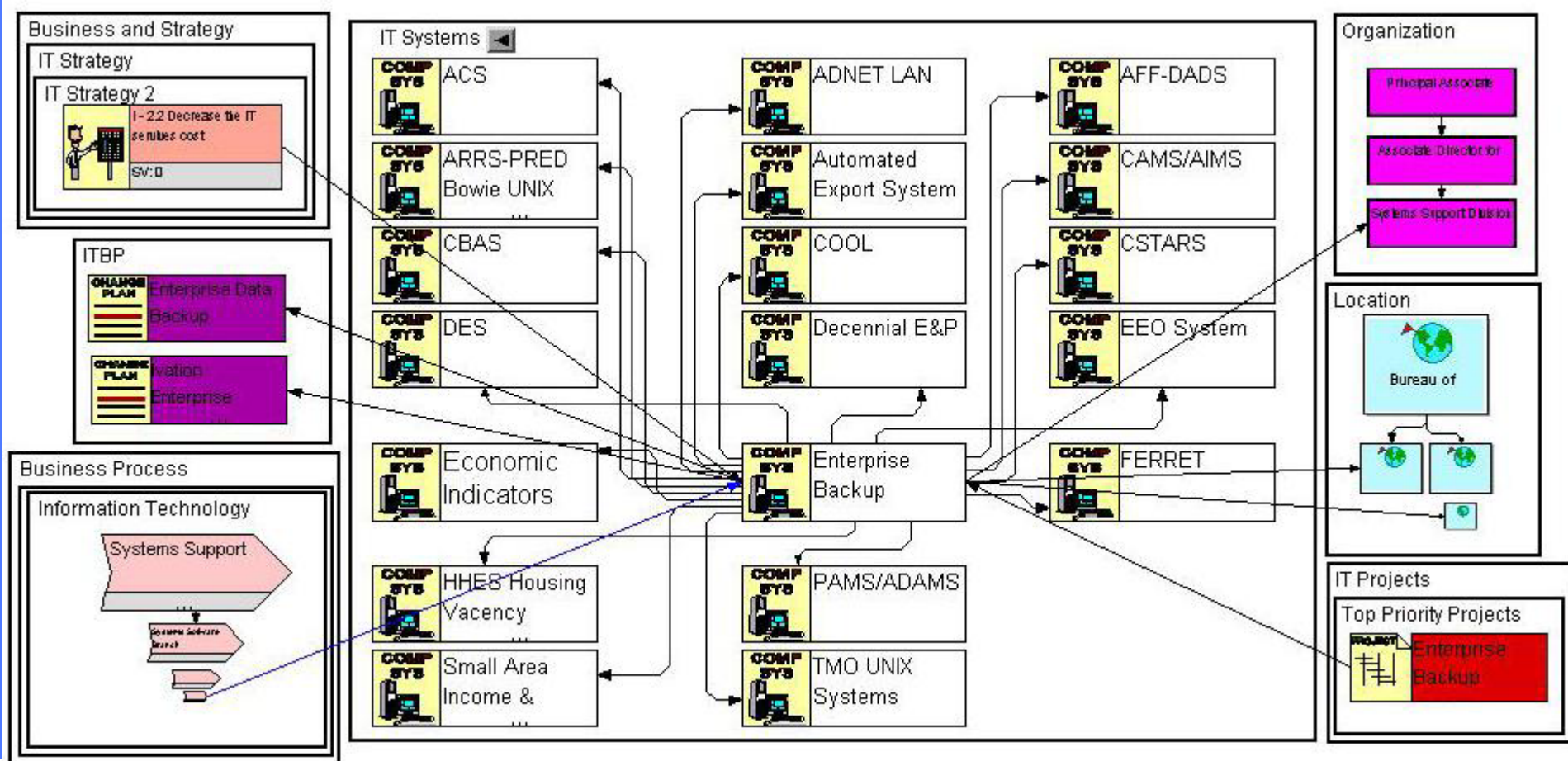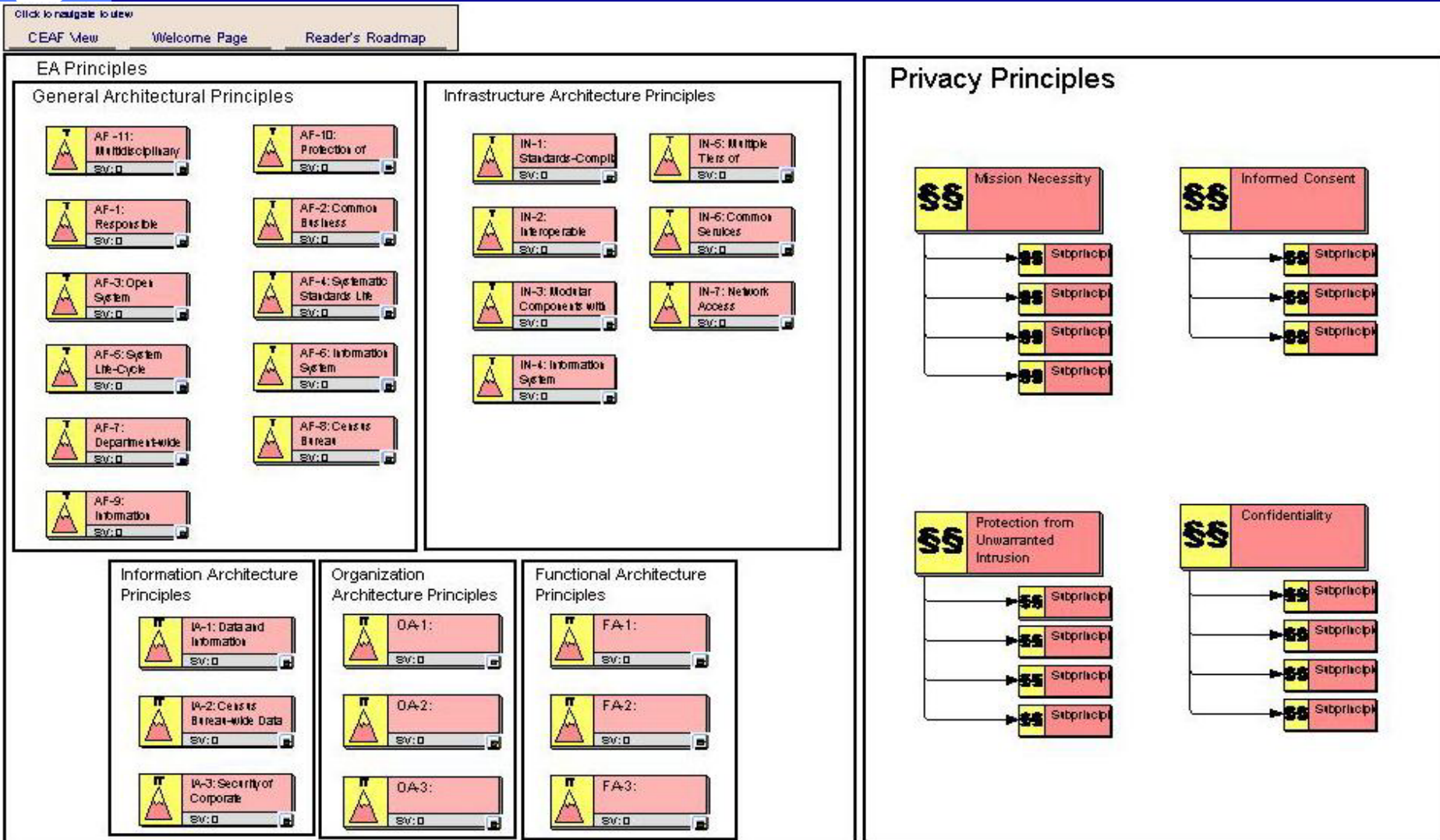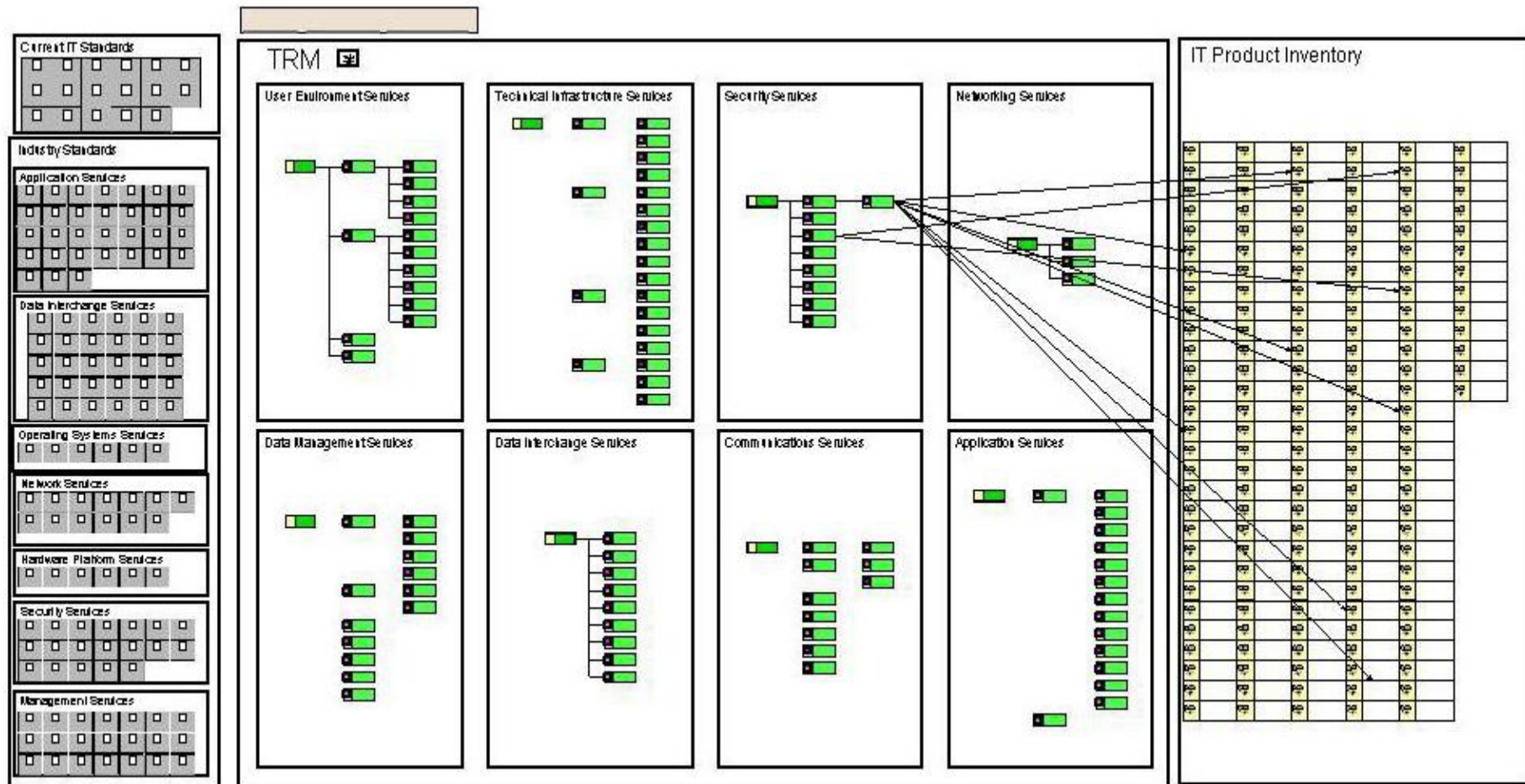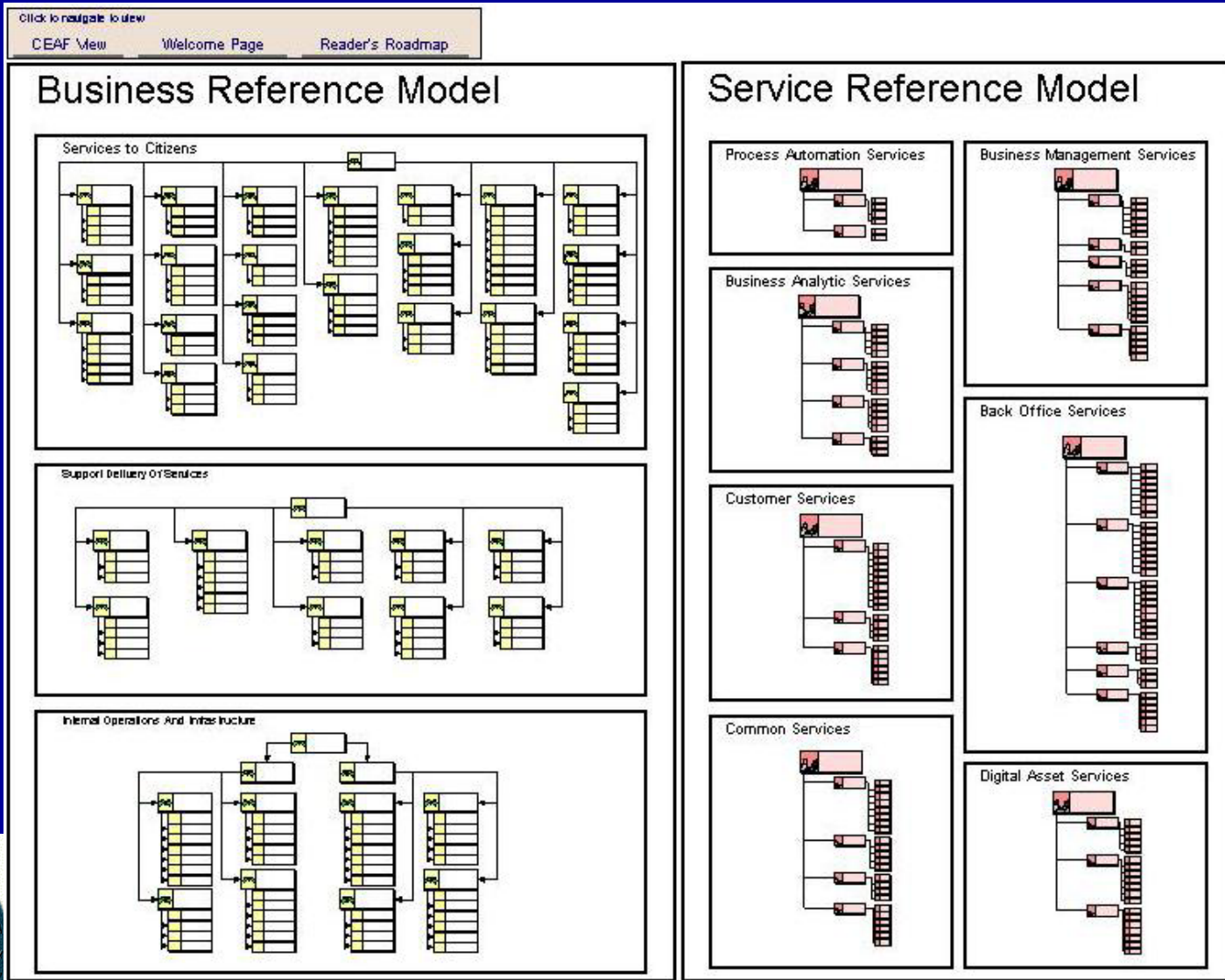
Dept of Commerce EA Framework Ver 0.45 05142003

Business Directions

Business Operations

Information, Products & Services (Outputs)

Applications (Solutions)

Data (Inputs)

Infrastructure

Dept of Commerce EA Framework Ver 0.45 05142003

Business Directions

Business Strategy - Why?

Business Strategy - What?

Business Strategy - How?

Information Needs (Key Questions)

EA Principles

Business Operations

Lines of Business

Business Processes

Requirement

Organization

Locations

Users & Stakeholders

Key Individuals

Programs

Capital Planning

Performance Measures

Information, Products & Services (Outputs)

Information (ID)

Product (PD)

Applications (Solutions)

Application Building Block (APD)

Application Function (APD)

Application Type (APD)

Application (APD)

Data (Inputs)

Data (DPD)

Database (DPD)

Data Interface (DPD)

Infrastructure

Computing System (IT TPD)

Operating System (IT TPD)

Mainframe (IT TPD)

Basic Software (IT TPD)

Application Environment (IT TPD)

Equipment (IT TPD)

Network (IT TPD)

Service System (IT TPD)

High Performance Computing

DBMS (IT TPD)

Middleware (IT TPD)

Network Router (IT TPD)

Hardware Platform (IT TPD)

Server (IT TPD)

Workstation/PC (IT TPD)

Communication SW (IT TPD)

Service Software (IT TPD)

Automatic Device (IT TPD)

Printer (IT TPD)

Terminal (IT TPD)

Disk (IT TPD)

Tape Device (IT TPD)

Technology Function (IT TPD)

Physical IT Item (IT TPD)

R-0   Zoom: 0.9131   23:10

Outline

- What is an IT Enterprise Architecture?
- Department of Commerce IT Architecture
- DoC Technical Reference Model and Standards Profile
- DoC IT Architecture Capability Maturity Model
- Commerce EA Model Toolset
- **Lessons Learned**

Enterprise Architecture

Success Factors

Tue, 14 Jan 2003 E-mail from Carl Staton, NOAA CIO, to NOAA's Line Office CIOs

...please ensure your AA/DAA/Director understands what we will have to do with respect to NOAA architecture(s), why we have to do it....(it is the right business process for us to do), what are the benefits, and consequences of not doing it.

Enterprise Architecture

Lessons Learned (Top Five)

- C **Cultural change is a greater challenge than the technical challenges**
- C **EA is a business enabler not an end unto itself**
- • **Must be in alignment with the Agency's strategic plan and business requirements**
- C **Must have CIO support and championship for Enterprise Architecture (EA)**
- • **It takes a long time to develop consensus and senior management buy-in**
- C There must be a shared and mutual vision with senior managers

Enterprise Architecture

C **The EA process is much more important than the EA Plan**

• **Great flexibility and creativity are required to modify the process so that it works for your organization**

– **Requires continuous review and update**

• **Defined by IT Principles and Standards**

C **Invaluable using mix of in-house and contractor staff and for owner to take the lead directly**

C **Critical to learn about EA requirements & EA successes and failures from all levels**

Lessons Learned (Continued)

C **Quick win situations should be identified early on and implemented but may be elusive**

• **Important to involve business staff in the process**

• **Multi-organizational collaborative efforts can be very effective and successful**

• **EA Home Page is essential and is an excellent communications tool**

C **Technology and business drivers can rapidly change.**

C **JUST DO IT!**

Contact Information

- **Department of Commerce IT Architecture Affinity Group**
    - **https://secure.cio.noaa.gov/hpcc/docita/**

- **Ira Grossman**

    NOAA OCIO

    (301) 713-3345 x140

    ira.m.grossman@noaa.gov

Enterprise Architecture